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THE
NAUTICAL ALMANAC

AND
ASTRONOMICAL EPHEMERIS,

FOR THE YEAR 1787.

Published by ORDER of the

COMMISSIONERS OF LONGITUDE,

L O N D O N :

PRINTED BY WILLIAM RICHARDSON,
PRINTER ;

AND SOLD BY

PETER ELMSLY in the STRAND,
Bookfeller to the said COMMISSIONERS.

M DCC LXXXIII.

[Price Three Shillings and Six Pence.]

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EXTRACT from the Act of Parliament
concerning the Longitude, made in the
Fifth Year of the Reign of his present
Majesty.

WHEREAS the Publication of Nautical Almanacs constructed by proper Persons, under the Direction of the said Commissioners, would greatly contribute to make the said Lunar Tables more generally useful; Be it further Enacted, by the Authority aforesaid, That it shall and may be lawful to and for the said Commissioners to cause such Nautical Almanacs, or other useful Tables, to be constructed, and to print, publish, and vend, or cause to be printed, published, and vended, any Nautical Almanac or Almanacs, or other useful Table or Tables, which they, or the major Part of them, shall, from time to time, judge necessary and useful, in order to facilitate the Method of discovering the Longitude at Sea; any Law, Statute, exclusive Privilege, private Charter, or other Custom, to the contrary thereof notwithstanding.

And be it Enacted, by the Authority aforesaid, That no Person or Persons shall print, publish, or vend, or cause to be printed, published, or vended, any Nautical Almanac or Almanacs, or other Table or Tables constructed under the Direction of the said Commissioners, without being first licensed by the said Commissioners, or the major Part of them: And if any Person or Persons not so licensed, or not being authorized by the Person or Persons so licensed by the said Commissioners, shall print, publish, or vend, or cause to be printed, published, or vended, any such Nautical Almanac or Almanacs, or other Table or Tables, every such Person or Persons shall, for every Copy of such Nautical Almanac or Table so printed, published, or vended, forfeit and pay the Sum of Twenty Pounds; to be recovered by Action of Debt, Bill, Complaint, or Information, in any of his Majesty's Courts of Record at *Westminster*; and that One Moiety of such Penalty and Forfeiture shall be to his Majesty, his Heirs and Successors, and the other Moiety to him or them that shall prosecute, in and for the same.

EXTRACT



EXTRACT of an Act for the Repeal of all former Acts concerning the Longitude at Sea, except so much thereof as relates to the Appointment and Authority of the Commissioners thereby constituted, and also such Clauses as relate to the constructing, printing, publishing, vending, and licensing of Nautical Almanacs and other useful Tables; and for the more effectual Encouragement and Reward of such Person and Persons as shall discover a Method for finding the same, or shall make useful Discoveries in Navigation; and for the better making Experiments relating thereto: Made in the Fourteenth Year of the Reign of his present Majesty.

BE it Enacted by the KING's Most Excellent Majesty, by and with the Advice and Consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the Authority of the same, That each and every of the said recited Acts (save and except such Clause and Clauses in each or any of them as relate to the Appointment or Authority of all or any of the Commissioners thereby respectively constituted, and also such Clause and Clauses as relate to the constructing, printing, publishing, vending, and licensing of Nautical Almanacs, and other useful Tables) shall, from and after the Twenty-fourth Day of *June* One thousand Seven hundred and Seventy-four, be, and are hereby repealed.

And, for a due and sufficient Encouragement to any Person or Persons who shall discover any Method or Methods for finding the said Longitude, Be it Enacted by the Authority aforesaid, That the First Author or Authors, Discoverer or Discoverers, of each and every such Method or Methods, his or their Executors, Administrators, or Assigns, shall be intitled to and have the Rewards or Sums of Money herein-after mentioned; that is to say, In case the Method proposed shall be, by means of a Time-keeper, the Principles whereof have not hitherto been made public, to the Reward or Sum of Five thousand

EXTRACT, &c.

Pounds, if such Method determines the said Longitude to One Degree of a great Circle, or Sixty geographical Miles; to the Reward or Sum of Seven thousand Five hundred Pounds, if it determines the same to Two Thirds of that Distance; and to the Reward or Sum of Ten thousand Pounds, if it determines the same to One Half of the said Distance: Which respective Rewards shall be due and paid when such Method shall have been sufficiently tried by the following Experiments and Voyages to be made and performed by such Persons, and under such Restrictions, as the said Commissioners for the Discovery of Longitude at Sea respectively constituted by the above-recited Acts, or the major Part of them, shall think fit to appoint and direct; (that is to say), When and so soon as Two or more Time-keepers of the same Construction shall have been tried at the same Time, for the Space of Twelve Months, at the Royal Observatory at *Greenwich*, then in Two Voyages round the Island of *Great Britain*, in contrary Directions, and in such other Voyages to different Climates as the said Commissioners shall think fit to direct and appoint; and after their Return from such Voyages, or any of them, for such longer Time, at the said Observatory, not exceeding Twelve Months, as the said Commissioners shall judge necessary; and also when and so soon as the said Commissioners, or Two Thirds of them at the least, shall, after such Experiments and Voyages have been made and performed as aforesaid, have declared and determined that such Method is generally practicable and useful, and sufficiently exact to determine the Longitude at Sea within the Degrees or Limits aforesaid, in all Voyages for the Space of Six Months, (Impediments from cloudy and hazy Weather excepted); and also when and so soon as the Principles and Practice of such Method are fully discovered and explained to the Satisfaction of the said Commissioners, or Two Thirds of them at least; and such Author or Authors, Discoverer or Discoverers, shall have delivered up and assigned over to the said Commissioners, for the Use of the Public, the absolute Property of such Time-keepers as shall have been tried

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tried by such Experiments and Voyages as aforesaid, together with all Plates, Descriptions, Theories, and Explanations belonging or relating to the same, and which shall contain the Whole of such Discovery of the Longitude; and in case the Method proposed shall be by means of improved Solar and Lunar Tables, then and in such Case the Author or Authors of such improved Solar and Lunar Tables, their Executors, Administrators, or Assigns, shall be intitled to and have the Reward or Sum of Five thousand Pounds, if such Solar and Lunar Tables shall prove sufficiently exact to shew the Distance of the Moon from the Sun and Stars in the Heavens within Fifteen Seconds of a Degree, answering to about Seven Minutes of Longitude, after making an Allowance of Half a Degree for the Errors of Observation; and when it shall appear to the Satisfaction of the said Commissioners, or Two Thirds of them at least, that such Tables are constructed intirely upon the Principles of Gravitation laid down by Sir *Isaac Newton* (except with respect to those Elements which must necessarily be taken from astronomical Observations), and also when the Truth of such Tables shall have been further confirmed and proved by Comparison with a Series of astronomical Observations made during a Period of Eighteen Years and a Half, which is deemed the Period of the Irregularities of the Lunar Motions; which Reward shall be due and paid, when the said Commissioners, or Two Thirds of them at least, shall have declared and determined, that such Tables are sufficiently exact to shew the Distance of the Moon from the Sun and Stars in the Heavens, within the Limits above-mentioned; and also when the Author or Authors of such improved Solar and Lunar Tables, his or their Executors, Administrators, or Assigns, shall have delivered up and assigned over to the said Commissioners, for the Use of the Public, the absolute Right and Property to and in the same, together with the Theory relating thereunto; and in case any other Method shall be proposed for finding the Longitude at Sea besides those before-mentioned, that then and in such Case the First Author or Authors, Discoverer or Discoverers, of
any

EXTRACT, &c.

any such Method; his or their Executors, Administrators, or Assigns, shall be intitled to and have the Reward or Sum of Five thousand Pounds, if it shall determine the said Longitude within One Degree of a great Circle or Sixty geographical Miles; to the Reward or Sum of Seven thousand Five hundred Pounds, if it shall determine the same to Two Thirds of that Distance; and to the Reward or Sum of Ten thousand Pounds, if it shall determine the same to One Half of the same Distance; which respective Rewards shall be due and paid, so soon as the said Commissioners, or Two Thirds of them at least, shall, after proper Trial have been made by their Appointment and Direction, have determined that such Method shall be generally practicable and useful for finding the Longitude at Sea within the respective Limits above-mentioned.

And be it further Enacted, by the Authority aforesaid, That when and so soon as any such Method or Methods, for the Discovery of the said Longitude, shall be tried, as before-mentioned, and found practicable and useful at Sea, and sufficiently exact to determine the Longitude within any of the Degrees or Limits aforesaid, the said Commissioners, or Two Thirds of them, shall certify the same, under their Hands and Seals, to the Commissioners of the Navy for the Time being, together with the Name or Names of the Person or Persons who shall be the Author or Authors of such Method or Methods; and upon the Receipt of such Certificate, the said Commissioners of the Navy are hereby authorized and required to make out a Bill or Bills upon the Treasurer of the Navy for the respective Sum or Sums of Money to which the Author or Authors of such Proposal, his or their Executors, Administrators, or Assigns, shall be intitled by virtue of this Act; which Sum or Sums the said Treasurer is hereby required to pay to the said Author or Authors, their Executors, Administrators, or Assigns accordingly, out of any Money that may be in his Hands unapplied to the Use of the Navy, according to the true Intent and Meaning of this Act.

And

EXTRACT, &c.

And be it further Enacted, by the Authority aforesaid, That the said Commissioners for the Discovery of Longitude at Sea, or any Five or more of them, shall have full Power and Authority to hear and receive any Proposal or Proposals that shall be made to them for discovering the said Longitude, or for making any other useful Improvement in Navigation; and in case the said Commissioners, or any Five or more of them, shall be so far satisfied of the Probability of any such Discovery or Improvement as to think it proper to cause Experiments to be made thereof, they shall certify the same, together with the Names of the Author or Authors of such Proposal or Proposals, under their Hands and Seals, to the Commissioners of the Navy, who are hereby authorized and required to make out a Bill or Bills upon the Treasurer of the Navy for any Sum or Sums of Money as the said Commissioners for the Discovery of Longitude at Sea, or any Five or more of them, shall think necessary for making such Experiments; which Sum or Sums the Treasurer of the Navy is hereby required to pay immediately to such Person or Persons as shall be appointed by the said Commissioners to make those Experiments out of any Money which shall be in his the said Treasurer's Hands unapplied as aforesaid.

And be it further Enacted, by the Authority aforesaid, That if any Person or Persons shall make any Discovery for finding the Longitude at Sea, which, though not of so great Use as to be intitled to any of the great Rewards above specified, shall nevertheless be adjudged by the said Commissioners for the Discovery of Longitude at Sea, or the major Part of them, to be of considerable Use to the Public, or shall make any other Discovery or Discoveries, Improvement or Improvements, useful to Navigation; then, and in such Case, such Person or Persons, his or their Executors, Administrators, or Assigns, shall, from time to time, have and receive such less Reward or Sum or Sums of Money as the said Commissioners, or the major Part of them, shall think reasonable; and certify accordingly, under their Hands and Seals, to the Commissioners of the Navy,

EXTRACT, &c.

Navy, who are hereby authorized and required to make out a Bill or Bills upon the Treasurer of the Navy for any such Sum or Sums of Money, which the said Treasurer is hereby authorized and required to pay immediately to such Person or Persons, his or their Executors, Administrators, or Assigns, out of any Money that shall be in his the said Treasurer's Hands unapplied as aforesaid.

Provided also, and it is hereby further Enacted, That in case any Person or Persons who shall and may have received any Sum or Sums of Money, by virtue of this Act, as a Reward for any Method of discovering the Longitude at Sea, shall afterwards become intitled to any of the greater Rewards appointed by this Act, for or on account of the same Method; that then, and in such Case, such Sum or Sums of Money as they shall or may have received as aforesaid shall be considered as Part of such greater Reward, and deducted therefrom accordingly; and that no Person shall receive more in the Whole for any One Method for discovering the Longitude at Sea than the greatest Reward appointed for such Method by this Act.

By the COMMISSIONERS appointed by Acts of Parliament for the Discovery of the Longitude at Sea; and for examining, trying, and judging of all Proposals, Experiments, and Improvements relating to the same.

WHEREAS we have employed proper Persons to compute Nautical Almanacs and Astronomical Ephemerides for the Years 1787, 1788, 1789, 1790, 1791, and 1792, which will greatly contribute to make the Lunar Tables constructed by the late Professor MAYER of *Gottingen* (which you have already printed with our Authority) more generally useful; and whereas we think fit to employ you to print the said Nautical Almanacs and Astronomical Ephemerides: We do therefore, in pursuance of the Power vested in us by Act of Parliament, hereby license, authorize, and empower you to cause the same to be printed, together with such other useful Tables for facilitating the Method of discovering the Longitude at Sea, as shall have been constructed under our Direction, and will be delivered to you by the Reverend Dr. NEVIL MASKELYNE, his Majesty's Astronomer Royal at *Greenwich*; and for so doing this shall be your sufficient Warrant. Given under our Hands and Seals the 13th Day of *February* 1783.

To Mr. WILLIAM
RICHARDSON,
Printer in the *Strand*,

HOWE (L.S.)
C.W. CORNWALL (L.S.)
H. DUNDAS (L.S.)
T. FRANKLAND (L.S.)
RODNEY (L.S.)
J. YOUNG (L.S.)
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P. STEPHENS (L.S.)
C. MIDDLETON (L.S.)
J. SMITH (L.S.)

By Command of the Commissioners,

H. PARKER, Secretary.

b

By

By the COMMISSIONERS appointed by Acts of Parliament for the Discovery of the Longitude at Sea; and for examining, trying, and judging of all Proposals, Experiments, and Improvements relating to the same.

WHEREAS we think fit to employ you (in the room of Mr. *John Nourse* deceased) to publish and vend, and to cause to be published and vended, all such Nautical Almanacs and Astronomical Ephemerides, and likewise all such other useful Tables, constructed under our Direction, as have hitherto been printed by Mr. *William Richardson*, from the Year 1767 to the present Time, and also such as may henceforward be printed by him, or any other Person employed by us for the Purpose, for the several Years next ensuing, down to the Year 1792 inclusive. We do therefore, in pursuance of the Power vested in us by Act of Parliament, hereby license, authorize, and empower you to publish and vend, and to cause to be published and vended, such Nautical Almanacs and Astronomical Ephemerides, as well as such other useful Tables, constructed under our Direction, as have hitherto been printed by Mr. *William Richardson* from the Year 1767 to the present Time, and also such as may henceforward be printed by him, or any other Person employed by us for the Purpose, for the several Years next ensuing down to the Year 1792 inclusive. For which this shall be your Warrant. Given under our Hands and Seals at the Admiralty, the 7th Day of December 1782.

To Mr. PETER ELMSLY,
Bookseller in the Strand.

KEPPEL	(L.S.)
C.W. CORNWALL	(L.S.)
T. FRANKLAND	(L.S.)
RODNEY	(L.S.)
J. YOUNG	(L.S.)
R. HARLAND	(L.S.)
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J. MARRIOTT	(L.S.)
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G. ROSE	(L.S.)
P. STEPHENS	(L.S.)
C. MIDDLETON	(L.S.)
J. SMITH	(L.S.)

By Command of the Commissioners,

H. PARKER, Secretary.

P R E F A C E.

THE Commissioners of Longitude, in pursuance of the Powers vested in them by Act of Parliament, present the Public with the NAUTICAL ALMANAC and ASTRONOMICAL EPHEMERIS for the Year 1787, being the Twenty-first Impression, to be continued annually; a Work which must greatly contribute to the Improvement of Astronomy, Geography, and Navigation. This EPHEMERIS contains every Thing essential to general Use that is to be found in any Ephemeris hitherto published, with many other useful and interesting Particulars never yet offered to the Public in any Work of this Kind. The Tables of the Moon had been brought by the late Professor MAYER of Gottingen to a sufficient Exactness to determine the Longitude at Sea, within a Degree, as appeared by the Trials of several Persons who made Use of them. The Difficulty and Length of the necessary Calculations seemed the only Obstacles to hinder them from becoming of general Use: To remove which this EPHEMERIS was made; the Mariner being hereby relieved from the Necessity of calculating the Moon's Place from the Tables, and afterwards computing the Distance to Seconds by Logarithms, which are the principal and only very delicate Part of the Calculus; so that the finding the Longitude by the Help of the EPHEMERIS is now in a Manner reduced to the Computation of the Time, an Operation.

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ration equal to that of an Azimuth, and the Correction of the Distance on account of Refraction and Parallax, which is also rendered very easy by either of the Two Methods invented by Mr. LYONS and Mr. DUNTHORNE, and published in the First Edition of the Tables requisite to be used with the EPHEMERIS, and since, with Improvements, in the Second Edition of the same Tables; or by either of the Two Methods annexed to the EPHEMERIS of 1772, being both Improvements of the Method which I formerly published in the BRITISH MARINER'S GUIDE and PHILOSOPHICAL TRANSACTIONS, the First by myself, and the Second by Mr. GEORGE WITCHELL, which are now also annexed to the Second Edition of the REQUISITE TABLES; but still more so by the GENERAL TABLES for correcting the apparent Distance of the Moon and a Star or the Sun from the Effects of Refraction and Parallax, computed at great Expence by Order of the Commissioners of Longitude, and published under the Care of Dr. SHEPHERD, Plumian Professor of Astronomy and experimental Philosophy, at CAMBRIDGE, in 1772.

All the Calculations of the EPHEMERIS relating to the Sun were made from Mr. MAYER'S last Manuscript Tables, received by the Board of Longitude after his Decease, which have been printed under my Inspection, and published in 1770; but the Calculations of the Moon were made in this EPHEMERIS, for the Eleventh time, from new Tables, improved from MAYER'S Tables, composed by Mr. CHARLES MASON, under my Direction, from Calculations made by Order of the Board of Longitude, upon the Series of Lunar Observa-

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Observations made by the late Dr. BRADLEY, and published in the Nautical Almanac of 1774. In these new Tables, the Epoch of the Moon's mean Longitude is 1" less, that of the Apogee is 56" less, and that of the Ascending Node 45" more, than in MAYER's printed Tables, and the Equations are calculated to Tenths of a Second. Moreover, One new Equation is introduced, whose Argument is the mean Distance of the Moon from the Sun's Apogee, and Maximum 16",4. These new Tables, when compared with the above-mentioned Series of Observations, a proper Allowance being made for the unavoidable Error of Observation, seem to give always the Moon's Longitude in the Heavens correctly within 45 Seconds of a Degree; which greatest Error, added to a possible Error of One Minute in taking the Moon's Distance from the Sun or a Star at Sea, will at a Medium only produce an Error of 50 Minutes of Longitude.

The Calculations of the Planets, and of the Eclipses of Jupiter's Satellites were calculated from the Tables of Mr. WARGENTIN, annexed to M. DE LA LANDE's Astronomy, excepting the Eclipses of Jupiter's Second Satellite, which were inserted in this EPHEMERIS for the Seventh time from new Tables transmitted to me from their learned Author Mr. WARGENTIN, Secretary to the Royal Academy of Sciences at STOCKHOLM, and published at the End of the Nautical Almanac of 1779.

All the Articles of the EPHEMERIS were computed by Two separate Persons, and examined by a Third, except the Moon's Longitude, Latitude, Right Ascension, Declination, Semidiameter, and Parallax,

P R E F A C E.

Parallax, which, for Noon, were computed by One Person, and for Midnight by another, and the Truth of these Calculations ascertained by mean, or Differences, which, for the Moon's Longitudes were carried as far as the Fourth Order.

To this EPHEMERIS is annexed a Treatise by the Rev'd *John Edwards*, B. A. containing Directions for making the best Composition for the Metals of Reflecting Telescopes; and the Method of casting, grinding, polishing, and giving them the true parabolic Figure; with an Account of the Cause and Cure of the Tremors peculiarly affecting Reflecting Telescopes more than Refracting ones.

Erratum. Omitted in the NAUTICAL ALMANAC
of 1786.

3d May 1786, γ 's Transit over the Sun's Disc.

	H. M.		M. S.
Ingress —	14. 15 $\frac{1}{2}$	γ Lat. N.	13. 27
Ecliptic γ	16. 25	— — —	11. 54
Middle —	16. 57	— — —	11. 31
Egress —	19. 38 $\frac{1}{2}$	— — —	9. 35

The nearest Approach of the Centers 11'. 43''.

NEVIL MASKELYNE,
ASTRONOMER ROYAL.

GREENWICH,

June 16th,

1783.

EXPLA-

EXPLANATION of the Characters used in the EPHEMERIS.

The PLANETS, &c.

- | | |
|---|--------------|
| ☉ The Sun. | ☿ The Earth. |
| ☾ The Moon. | ♂ Mars. |
| ☿ Mercury. | ♃ Jupiter. |
| ♀ Venus. | ♄ Saturn. |
| ♊ The Moon's, or any other Planet's Ascending Node. | |
| ♋ The Descending Node. | |
| ♌ Conjunction, or Planets situated in the same Longitude. | |
| ♍ Opposition, or Planets situated in opposite Longitudes, or differing 6 Signs from each other. | |

Signs of the Zodiac.

- | | |
|--------------|-------------------|
| S. | S. |
| 0. ♈ Aries. | 6. ♎ Libra. |
| 1. ♉ Taurus. | 7. ♏ Scorpio. |
| 2. ♊ Gemini. | 8. ♐ Sagittarius. |
| 3. ♋ Cancer. | 9. ♑ Capricornus. |
| 4. ♌ Leo. | 10. ♒ Aquarius. |
| 5. ♍ Virgo. | 11. ♓ Pisces. |

ECLIPSES in the YEAR 1787.

January 3. ☾ eclipsed, visible: H. M.
 Beginning of Eclipse — 10. 0
 Beginning of total Darkness 10. 58
 Middle — — — 11. 47½
 End of total Darkness — 12. 37
 End of Eclipse — — 13. 35
 Dig. eclipsed 20°. 56'. from N. Side of ☉'s Shadow.

January 18. ☉ eclipsed, visible: H. M.
 Beginning — — — 21. 54
 Middle — — — 22. 33
 End — — — 23. 12½
 Dig. eclipsed 1°. 17' on ☉'s northern Limb.
 ☾ makes the First Impression on solar Disc at 42°
 from ☉'s Vertex on the right Hand.

June 15. ☉ eclipsed, visible: H. M.
 Beginning — — — 4. 11½
 Middle — — — 4. 56½
 End — — — 5. 47½
 Dig. eclipsed 5°. 24' on ☉'s northern Limb.
 ☾ makes the First Impression on the solar Disc
 at 88°½ from ☉'s Vertex on the right Hand.

June

ECLIPSES in the YEAR 1787.

June 30. ☾ eclipsed, invisible: H. M.
 Beginning of Eclipse — 0. 43 $\frac{1}{2}$
 Beginning of total Darknesh 1. 59 $\frac{1}{2}$
 Middle — — — 2. 34 $\frac{1}{2}$
 End of total Darknesh -- 3. 10 $\frac{1}{2}$
 End of Eclipse — — 4. 26 $\frac{1}{2}$
 Dig. eclipsed 14°. 27'. from N. Side of ☉'s Shadow.

December 9. ☉ eclipsed, invisible:
 ☿ at 4^h. 11' in Long. 8°. 17°. 36'. D's Lat. 47 $\frac{1}{2}$
 South. ☉ will be centrally eclipsed on the
 Merid. at 4^h. 20' in Long. 65°. West, and
 Lat. 84° South.

December 24. ☾ eclipsed, partly visible: H. M.
 Beginning — — — 1. 42
 Middle — — — 3. 7 $\frac{1}{2}$
 ☾ rises — — — 3. 52
 End — — — 4. 32 $\frac{1}{2}$
 Dig. eclipsed 9°. 18' on ☾'s northern Limb.

OBLIQUITY, &c.

1787.	Obliquity of the Ecliptic.	Equat. of Equin. Points.
	D. M. S.	S.
Jan. 1.	23. 28. 3,2	+17,4
Apr. 1.	23. 28. 2,3	+17,7
July 1.	23. 28. 1,3	+18,0
Oct. 1.	23. 28. 0,4	+18,0
Dec. 31.	23. 27. 59,4	+18,0

I. JANUARY 1787. [1]			Phases of the Moon.	
Days of the Month.	Days of the Week.	Sundays, Holidays, &c.	D. M.	
			Full Moon —	3. 11. 47
			Last Quarter —	10. 18. 52
			New Moon —	18. 22. 47
			First Quarter —	26. 5. 12
			Other Phenomena.	
			D. M.	
1	M.	Circumcision.	2. 1. 24	☾ 125 8
2	Tu.		4. 13	Em. of 132 8
3	W.			* 4 $\frac{1}{2}$ N. of
4	Th.			D's center.
5	F.			☿ Stationary.
6	Sa.	Epiphany.		☿ Stationary.
7	Su.	1st Sunday after Epiphany.		☾ ecl. visible.
8	M.	Lucian.	14. 54	☾ ☿
9	Tu.		5. 22. 37	☾ ☿
10	W.		6. 3. 10	☾ ☿
11	Th.		10. 15 $\frac{1}{2}$	Im. of ☿ ☿
12	F.			* 1 $\frac{1}{2}$ N.
13	Sa.	Hil. Camb. Ter. begins.	11. 19 $\frac{1}{2}$	Em. * 5 $\frac{1}{4}$ N.
14	Su.	2d Sunday after Epiphany.		of D's center.
15	M.	Oxford Term begins.	8. 9. 35	☾ ecl.
16	Tu.		13.	☿ 1 ad μ 7 d. L. 56'
17	W.	[kept. Prisca.	14. 11. 7	☾ ☿
18	Th.	☿ Charlene's birth-day	15. 5	☾ ☿
19	F.	[Hil. 1 ret.	15. 14. 32	☾ ☿ Ophiuchi.
20	Sa.	Fabian. In 8 days of St.	16. 19. 11 $\frac{1}{4}$	Im. of ☿ ☿
21	Su.	3d Sunday after Epiphany.		* 12 $\frac{1}{4}$ S. of
22	M.	Vincent. [Agnes.	17. 3. 47	☾ ☿ [D's cent.
23	Tu.	Hilary Term begins.	18.	☉ ecl. visible.
24	W.		19. 12. 59	☉ enters ☿
25	Th.	Conversion of St. Paul.	21. 8. 19	☾ ☿
26	F.	[days of St. Hil. 2 ret.	23.	☿ ☿ diff. Lat. 41'
27	Sa.	Pr. Aug. Fred. born. In 15		☿ ☿ d. Lat. 56'
28	Su.	4th Sunday after Epiphany.	25.	☿ Stationary.
29	M.		7. 3	☾ ☿
30	Tu.	K. Charles I. martyr.	27. 15. 25	☾ ☿ Pleiadum.
31	W.		29. 10. 0	☾ 125 8
			14. 5	Im. of 132 8
				* 1 $\frac{1}{2}$ N.
			14. 58	Em. * 7 $\frac{1}{2}$ N. of
			31. 0. 34	☾ ☿ ☿ D's cent.

[2]		J A N U A R Y 1787.				II.
Days of the Month.	Days of the Week.	Sun's Longitude.	Sun's Right Asc. in Time.	Sun's Declin. South.	Equat. of Time Add.	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M. S.	S.
1	M.	9. 11. 6,32	18.48.19,7	23. 0. 9	4. 8,0	28,1
2	Tu.	9. 12. 7,42	18.52.44,8	22.54.49	4.36,1	27,7
3	W.	9. 13. 8,51	18.57. 8,7	22.49. 2	5. 3,8	27,3
4	Th.	9. 14.10. 0	19. 1.32,6	22.42.48	5.31,1	26,8
5	F.	9. 15.11. 9	19. 5.56,0	22.36. 7	5.57,9	26,3
6	Sa.	9. 16.12.18	19.10.19,0	22.28.59	6.24,2	25,9
7	Su.	9. 17.13.26	19.14.41,6	22.21.24	6.50,1	25,5
8	M.	9. 18.14.35	19.19. 3,7	22.13.23	7.15,6	24,9
9	Tu.	9. 19.15.43	19.23.25,2	22. 4.56	7.40,5	24,3
10	W.	9. 20.16.52	19.27.46,1	21.56. 3	8. 4,8	23,8
11	Th.	9. 21.18. 0	19.32. 6,5	21.46.45	8.28,6	23,2
12	F.	9. 22.19. 9	19.36.26,4	21.37. 1	8.51,8	22,7
13	Sa.	9. 23.20.17	19.40.45,7	21.26.52	9.14,5	22,0
14	Su.	9. 24.21.24	19.45. 4,3	21.16.18	9.36,5	21,3
15	M.	9. 25.22.32	19.49.22,2	21. 5.19	9.57,8	20,6
16	Tu.	9. 26.23.39	19.53.39,4	20.53.56	10.18,4	20,0
17	W.	9. 27.24.46	19.57.56,0	20.42. 9	10.38,4	19,3
18	Th.	9. 28.25.52	20. 2.11,9	20.29.59	10.57,7	18,6
19	F.	9. 29.26.57	20. 6.27,1	20.17.25	11.16,3	17,8
20	Sa.	10. 0.28. 1	20.10.41,5	20. 4.29	11.34,1	17,0
21	Su.	10. 1.29. 5	20.14.55,1	19.51.10	11.51,1	16,2
22	M.	10. 2.30. 8	20.19. 7,9	19.37.29	12. 7,3	15,4
23	Tu.	10. 3.31.10	20.23.19,9	19.23.26	12.22,7	14,6
24	W.	10. 4.32.11	20.27.31,2	19. 9. 2	12.37,3	13,8
25	Th.	10. 5.33.10	20.31.41,6	18.54.17	12.51,1	13,0
26	F.	10. 6.34. 7	20.35.51,1	18.39.12	13. 4,1	12,1
27	Sa.	10. 7.35. 3	20.39.59,8	18.23.46	13.16,2	11,2
28	Su.	10. 8.35.58	20.44. 7,6	18. 8. 0	13.27,4	10,4
29	M.	10. 9.36.52	20.48.14,6	17.51.55	13.37,8	9,6
30	Tu.	10. 10.37.44	20.52.20,8	17.35.31	13.47,4	8,8
31	W.	10. 11.38.35	20.56.26,1	17.18.49	13.56,2	

III. JANUARY 1787. [3]

Days of the Month.	Semidiameter of the Sun.	Time of D ^o passing the Meridian.	Hourly Motion of the Sun.	Logarithm of the Sun's Distance.	Place of the Moon's Node.
	M. S.	M. S.	M. S.		S. D. M.
1	16. 19, 2	1. 10, 9	2. 32, 9	9. 992630	9. 14. 39
7	16. 19, 1	1. 10, 6	2. 32, 8	9. 992698	9. 14. 19
13	16. 18, 8	1. 10, 1	2. 32, 8	9. 992863	9. 14. 0
19	16. 18, 3	1. 9, 5	2. 32, 6	9. 993099	9. 13. 41
25	16. 17, 6	1. 8, 9	2. 32, 4	9. 993387	9. 13. 22

Eclipses of the SATELLITES of J U P I T E R.

I. Satellite. Emerfions:		II. Satellite. Emerfions.		III. Satellite.	
Days	H. M. S.	Days	H. M. S.	Days	H. M. S.
1	4. 13. 58	*3	8. 21. 47	*2	5. 33. 47 I
2	22. 42. 2	6	21. 39. 7	*2	7. 17. 11 E
4	17. 10. 7	*10	10. 56. 29	*9	9. 32. 3 I
*6	11. 38. 14	14	0. 13. 56	*9	11. 16. 10 E
*8	6. 6. 22	17	13. 31. 28	16	13. 30. 53 I
10	0. 34. 31	21	2. 49. 7	16	15. 15. 44 E
11	19. 2. 43	24	16. 6. 54	23	17. 30. 21 I
13	13. 30. 57	28	2. 55. 12 I	23	19. 15. 54 E
*15	7. 59. 13	*28	5. 24. 49 E	30	21. 30. 27 I
17	2. 27. 33	31	16. 13. 8 I	30	23. 16. 54 E
18	20. 55. 55	31	18. 42. 52 E	IV. Satellite. Conj.	
20	15. 24. 19			7	21. 54 Sup.
*22	9. 52. 44			*16	5. 16 Inf.
24	4. 21. 12			24	15. 8 Sup.
25	22. 49. 43				
27	17. 18. 18				
*29	11. 46. 56				
*31	6. 15. 36				

[4] JANUARY 1787. IV.

Days.	Heliocen- tric Lon- gitude.	Heliocen- tric Lat- tude.	Geocen- tric Lon- gitude.	Geocen- tric La- titude.	Declina- tion.	Passage over Merid.
	S. D. M.	D. M.	S. D. M.	D. M.	D. M.	H. M.

MERCURY. Gr. Elong. 13^d.

1	4. 22. 17	6. 57 N	8. 23. 54	3. 8 N	20. 11 S	22. 40
4	5. 6. 53	6. 32	8. 23. 44	2. 52	20. 27	22. 28
7	5. 20. 8	5. 47	8. 24. 48	2. 29	20. 53	22. 22
10	6. 2. 11	4. 51	8. 26. 46	2. 2	21. 23	22. 18
13	6. 13. 13	3. 47	8. 29. 26	1. 34	21. 54	22. 17
16	6. 23. 27	2. 41	9. 2. 34	1. 5	22. 21	22. 18
19	7. 3. 2	1. 33	9. 6. 4	0. 37	22. 42	22. 21
22	7. 12. 6	0. 27 N	9. 9. 56	0. 11 N	22. 55	22. 25
25	7. 20. 49	0. 37 S	9. 13. 48	0. 14 S	22. 59	22. 30
28	7. 29. 16	1. 38	9. 17. 57	0. 37	22. 52	22. 36
31	8. 7. 33	2. 36	9. 22. 15	0. 58	22. 35	22. 43

VENUS. Inf. δ 4^d. 4^h.

1	3. 9. 12	1. 24 N	9. 16. 18	3. 47 N	18. 42 S	0. 20
7	3. 18. 55	1. 54	9. 12. 38	5. 7	17. 46	23. 32
13	3. 28. 40	2. 21	9. 9. 25	6. 4	17. 5	22. 53
19	4. 8. 25	2. 44	9. 7. 21	6. 34	16. 42	22. 20
25	4. 18. 11	3. 2	9. 6. 43	6. 40	16. 38	21. 53

MARS

1	8. 14. 32	0. 50 S	8. 25. 5	0. 31 S	23. 53 S	22. 49
7	8. 17. 52	0. 55	8. 29. 33	0. 34	24. 2	22. 42
13	8. 21. 14	1. 1	9. 4. 3	0. 38	24. 2	22. 36
19	8. 24. 38	1. 6	9. 8. 34	0. 41	23. 53	22. 30
25	8. 28. 4	1. 11	9. 13. 6	0. 45	23. 34	22. 25

JUPITER. $\square$ 31^d. 21^h.

1	1. 21. 9	0. 59 S	1. 11. 22	1. 6 S	14. 13 N	7. 47
7	1. 21. 41	0. 58	1. 11. 21	1. 4	14. 14	7. 21
13	1. 22. 13	0. 58	1. 11. 27	1. 3	14. 18	6. 55
19	1. 22. 45	0. 57	1. 11. 41	1. 1	14. 23	6. 31
25	1. 23. 18	0. 57	0. 12. 1	0. 59	14. 31	6. 7

SATURN.

1	10. 18. 24	1. 7 S	10. 15. 12	1. 2 S	17. 17 S	2. 23
7	10. 18. 35	1. 8	10. 15. 51	1. 2	17. 6	2. 6
13	10. 18. 46	1. 8	10. 16. 31	1. 2	16. 54	1. 36
19	10. 18. 58	1. 9	10. 17. 13	1. 3	16. 41	1. 13
25	10. 19. 9	1. 9	10. 17. 55	1. 3	16. 29	0. 51

V. JANUARY 1787. [5]					
Days of the Month.	Days of the Week.	Moon's Longitude at Noon.	Moon's Longitude at Midnight.	Moon's Latitude at Noon.	Moon's Latitude at Midn.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
1	M.	2. 6.43.14	2. 14. 9.15	3.14.21 N	2.40.10 N
2	Tu.	2. 21.35.35	2. 29. 1.18	2. 3.15	1.24.16
3	W.	3. 6.25.27	3. 13.46.58	0.44. 1 N	0. 3.13 N
4	Th.	3. 21. 5. 5	3. 28.18.51	0.37.18 S	1.16.49 S
5	F.	4. 5.27.40	4.12.30.57	1.54.39	2.30.15
6	Sa.	4. 19.28.18	4. 26.19.25	3. 3. 5	3.32.46
7	Su.	5. 3. 4.13	5. 9.42.46	3.59. 0	4.21.34
8	M.	5. 16.15. 9	5. 22.41.41	4.40.22	4.55.18
9	Tu.	5. 29. 2.38	6. 5.18.29	5. 6.24	5.13.40
10	W.	6. 11.29.41	6. 17.36.46	5.17.11	5.17. 3
11	Th.	6. 23.40.19	6. 29.40.54	5.13.22	5. 6.17
12	F.	7. 5.39. 7	7. 11.35.34	4.55.57	4.42.27
13	Sa.	7. 17.30.52	7. 23.25.34	4.26. 1	4. 6.46
14	Su.	7. 29.20.15	8. 5.15.26	3.44.53	3.20.35
15	M.	8. 11.11.38	8. 17. 9.16	2.54. 2	2.25.31
16	Tu.	8. 23. 8.47	8. 29.10.33	1.55.14	1.23.30
17	W.	9. 5.14.51	9. 11.21.59	0.50.36 S	0.16.53 S
18	Th.	9. 17.32. 8	9. 23.45.31	0.17.18 N	0.51.33 N
19	F.	10. 0. 2.11	10. 6.22.18	1.25.28	1.58.36
20	Sa.	10. 12.45.54	10. 19.13. 0	2.30.33	3. 0.50
21	Su.	10. 25.43.34	11. 2.17.35	3.29. 2	3.54.43
22	M.	11. 8.54.57	11. 15.35.39	4.17.27	4.36.52
23	Tu.	11. 22.19.31	11. 29. 6.32	4.52.38	5. 4.25
24	W.	0. 5.56.29	0. 12.49.22	5.12. 0	5.15. 9
25	Th.	0. 19.44.56	0. 26.43.10	5.13.46	5. 7.46
26	F.	1. 3.43.49	1. 10.46.47	4.57. 9	4.42. 2
27	Sa.	1. 17.51.49	1. 24.58.45	4.22.32	3.58.55
28	Su.	2. 2. 7.16	2. 9.17. 9	3.31.31	3. 0.42
29	M.	2. 16.28. 0	2. 23.39.25	2.26.59	1.50.54
30	Tu.	3. 0.50.58	3. 8. 2. 8	1.13. 3 N	0.34. 5 N
31	W.	3. 15.12.22	3. 22.21. 5	0. 5.18 S	0.44.25 S

[6]		JANUARY 1787.					VI.
Days of the Month.	Days of the Week.	D's Age.	D's Passage over Merid.	D's Right Ascens. at Noon.	D's Right Ascens. at Midn.	D's Declination at Noon.	D's Declination at Midn.
			H. M.	D. M.	D. M.	D. M.	D. M.
1	M.	13	9. 54	64. 16	72. 28	24. 39 N	25. 11 N
2	Tu.	14	10. 58	80. 42	88. 55	25. 15	24. 52
3	W.	15	12. 0	97. 2	104. 59	24. 3	22. 48
4	Th.	16	12. 59	112. 42	120. 9	21. 12	19. 16
5	F.	17	13. 53	127. 20	134. 15	17. 4	14. 40
6	Sa.	18	14. 42	140. 55	147. 21	12. 6	9. 25
7	Su.	19	15. 28	153. 35	159. 38	6. 40	3. 54 N
8	M.	20	16. 12	165. 32	171. 21	1. 7 N	1. 37 S
9	Tu.	21	16. 54	177. 5	182. 47	4. 18 S	6. 54
10	W.	22	17. 36	188. 28	194. 10	9. 25	11. 48
11	Th.	23	18. 20	199. 55	205. 44	14. 3	16. 9
12	F.	24	19. 5	211. 37	217. 36	18. 4	19. 48
13	Sa.	25	19. 52	223. 42	229. 55	21. 20	22. 38
14	Su.	26	20. 41	236. 14	242. 40	23. 41	24. 29
15	M.	27	21. 31	249. 11	255. 47	25. 1	25. 16
16	Tu.	28	22. 22	262. 25	269. 5	25. 12	24. 51
17	W.	29	23. 12	275. 45	282. 23	24. 12	23. 16
18	Th.	1	♂	288. 58	295. 29	22. 2	20. 32
19	F.	2	0. 1	301. 54	308. 15	18. 46	16. 48
20	Sa.	3	0. 49	314. 30	320. 41	14. 35	12. 13
21	Su.	4	1. 35	326. 48	332. 52	9. 41	7. 1
22	M.	5	2. 21	338. 55	344. 58	4. 16 S	1. 26 S
23	Tu.	6	3. 7	351. 2	357. 10	1. 26 N	4. 18 N
24	W.	7	3. 54	3. 23	9. 43	7. 8	9. 54
25	Th.	8	4. 43	16. 12	22. 52	12. 34	15. 5
26	F.	9	5. 36	29. 43	36. 47	17. 26	19. 32
27	Sa.	10	6. 32	44. 5	51. 35	21. 22	22. 54
28	Su.	11	7. 31	59. 16	67. 6	24. 4	24. 51
29	M.	12	8. 32	75. 1	82. 59	25. 13	25. 10
30	Tu.	13	9. 35	90. 56	98. 47	24. 41	23. 48
31	W.	14	10. 35	106. 30	114. 1	22. 31	20. 53

VII.		JANUARY 1787.				[7]	
Days of the Month.	Days of the Week.	Semid. ☽ at Noon.	Semid. ☽ at Mid-night.	Hor. Par. ☽ at Noon.	Hor. Par. ☽ at Midnight.	Proport. Lo- gar. at Noon.	Proport. Lo- gar. at Midn.
		M. S.	M. S.	M. S.	M. S.		
1	M.	16. 33	16. 34	60. 45	60. 48	4717	4714
2	Tu.	16. 34	16. 33	60. 48	60. 44	4714	4718
3	W.	16. 31	16. 28	60. 36	60. 24	4728	4742
4	Th.	16. 23	16. 18	60. 8	59. 48	4761	4786
5	F.	16. 12	16. 5	59. 27	59. 3	4811	4841
6	Sa.	15. 58	15. 51	58. 37	58. 16	4872	4906
7	Su.	15. 44	15. 36	57. 43	57. 16	4940	4973
8	M.	15. 29	15. 22	56. 50	56. 25	5006	5038
9	Tu.	15. 16	15. 10	56. 2	55. 40	5068	5097
10	W.	15. 5	15. 0	55. 21	55. 4	5122	5144
11	Th.	14. 56	14. 53	54. 49	54. 38	5163	5178
12	F.	14. 51	14. 49	54. 28	54. 22	5191	5199
13	Sa.	14. 48	14. 47	54. 18	54. 16	5205	5207
14	Su.	14. 48	14. 48	54. 17	54. 19	5206	5203
15	M.	14. 49	14. 51	54. 24	54. 31	5197	5187
16	Tu.	14. 54	14. 57	54. 39	54. 50	5177	5162
17	W.	15. 0	15. 3	55. 1	55. 13	5148	5132
18	Th.	15. 7	15. 10	55. 27	55. 41	5114	5095
19	F.	15. 14	15. 18	55. 55	56. 10	5077	5058
20	Sa.	15. 22	15. 26	56. 25	56. 40	5038	5019
21	Su.	15. 30	15. 34	56. 55	57. 9	5000	4983
22	M.	15. 38	15. 42	57. 24	57. 38	4964	4946
23	Tu.	15. 46	15. 50	57. 53	58. 7	4927	4910
24	W.	15. 54	15. 57	58. 20	58. 33	4893	4877
25	Th.	16. 1	16. 4	58. 45	58. 56	4863	4849
26	F.	16. 7	16. 10	59. 7	59. 18	4835	4822
27	Sa.	16. 12	16. 14	59. 27	59. 36	4811	4800
28	Su.	16. 16	16. 18	59. 43	59. 48	4792	4786
29	M.	16. 19	16. 19	59. 52	59. 53	4781	4779
30	Tu.	16. 19	16. 18	59. 52	59. 49	4781	4784
31	W.	16. 16	16. 14	59. 42	59. 32	4793	4805

IX.		JANUARY 1787.										[6]					
Day.	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.
13	The Sun.	65.	54. 2	64.	33. 6	63.	12. 10	61.	51. 14	60.	30. 18	59.	9. 21	57.	48. 22	56.	27. 21
14		55.	6. 18	53.	45. 12	52.	24. 2	51.	2. 48	49.	41. 31	48.	20. 8	46.	58. 40	45.	37. 6
15		44.	15. 26	42.	53. 40	41.	31. 47	40.	9. 47	38.	47. 40						
20	α Arietis.	68.	41. 29	67.	3. 42	65.	25. 44	63.	47. 36	75.	10. 47	73.	33. 45	71.	56. 31	70.	19. 5
21		55.	34. 23	53.	55. 14	52.	15. 56	50.	36. 29	62.	9. 17	60.	30. 48	58.	52. 10	57.	13. 21
22		42.	17. 10	40.	36. 54	38.	56. 32	37.	16. 4	48.	56. 53	47.	17. 9	45.	37. 17	43.	57. 17
23		28.	52. 46							35.	35. 31	33.	54. 54	32.	14. 14	30.	33. 31
24	Aldebaran.	61.	43. 18	60.	2. 17	58.	21. 10	56.	39. 57	54.	58. 37	53.	17. 12	51.	35. 42	49.	54. 9
25		48.	12. 31	46.	30. 48	44.	49. 4	43.	7. 20	41.	25. 35	39.	43. 50	38.	2. 10	36.	20. 38
26		34.	39. 12	32.	57. 48	31.	16. 45	29.	36. 4	27.	55. 44	26.	15. 59	24.	36. 50	22.	58. 24
27	Pollux.	21.	20. 46														
27		62.	8. 51	60.	23. 32	58.	38. 8	56.	52. 38	55.	7. 2	53.	21. 22	51.	35. 39	49.	49. 53
28		48.	4. 5	46.	18. 14	44.	32. 24	42.	45. 35	41.	0. 47	39.	15. 3	37.	29. 24	35.	43. 52
29	Regulus.	33.	58. 26														
29		70.	24. 53	68.	37. 6	66.	49. 16	65.	1. 24	63.	13. 31	61.	25. 36	59.	37. 42	57.	49. 48
30		56.	1. 54	54.	14. 2	52.	26. 12	50.	38. 26	48.	50. 43	47.	3. 4	45.	15. 32	43.	28. 6
31		41.	40. 47	39.	53. 35	38.	6. 35	36.	19. 45	34.	33. 6	32.	46. 39	31.	0. 28	29.	14. 31
P. 1		27.	28. 49														

Distances of γ 's Center from Sun, and from Stars west of her.

Days.	Stars Names.	Noon.	3 Hours.	6 Hours.	9 Hours.	12 Hours.	15 Hours.	18 Hours.	21 Hours.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
1		32. 29. 40	34. 19. 51	36. 10. 12	38. 0. 45	39. 51. 28	41. 42. 19	43. 33. 15	45. 24. 16
2	α Arietis.	47. 15. 21	49. 6. 28	50. 57. 34	52. 48. 39	54. 39. 44	56. 30. 46	58. 21. 41	60. 12. 32
3		62. 3. 16							
3		30. 12. 25	31. 58. 46	33. 45. 17	35. 32. 0	37. 18. 54	39. 5. 55	40. 52. 55	42. 39. 56
4	Aldeba-	44. 26. 55	46. 13. 45	48. 0. 25	49. 46. 56	51. 33. 17	53. 19. 24	55. 5. 16	56. 50. 53
5	ran.	58. 36. 14	60. 21. 15	62. 5. 58	63. 50. 20	65. 34. 24	67. 18. 7	69. 1. 27	70. 44. 26
6		72. 27. 12							
6		30. 42. 25	32. 22. 57	34. 3. 18	35. 43. 26	37. 23. 24	39. 3. 7	40. 42. 34	42. 21. 44
7	Pollux.	44. 0. 36	45. 39. 10	47. 17. 24	48. 55. 19	50. 32. 54	52. 10. 9	53. 47. 2	55. 23. 34
8		56. 59. 45							
8		20. 1. 15	21. 36. 20	23. 11. 12	24. 45. 34	26. 20. 23	27. 54. 40	29. 28. 42	31. 2. 31
9		32. 36. 5	34. 9. 28	35. 42. 25	37. 15. 12	38. 47. 44	40. 20. 0	41. 52. 1	43. 23. 47
10	Regulus.	44. 55. 19	46. 26. 36	47. 57. 41	49. 28. 32	50. 59. 11	52. 29. 38	53. 59. 53	55. 29. 58
11		56. 59. 51	58. 29. 34	59. 59. 9	61. 28. 34	62. 57. 51	64. 27. 0	65. 56. 2	67. 24. 58
12		68. 53. 47	70. 22. 30	71. 51. 9	73. 19. 44	74. 48. 14			
12									
12		20. 50. 57	22. 18. 38	23. 46. 22	25. 14. 9	26. 50. 57	28. 38. 38	29. 46. 22	31. 14. 9
13	Spica π	26. 41. 59	28. 9. 53	29. 37. 50	31. 5. 50	32. 35. 54	34. 2. 1	35. 30. 12	36. 58. 26
14		38. 26. 45	39. 55. 8	41. 23. 36	42. 52. 9	44. 20. 48	45. 49. 33	47. 18. 24	48. 47. 21

XI. JANUARY 1787. [11]

Days	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D.	M.S.	D.	M.S.	D.	M.S.	D.	M.S.	D.	M.S.	D.	M.S.	D.	M.S.	D.	M.S.
15	Spica ♋	50.	16. 25	51.	45. 36	53.	14. 54	54.	44. 21	56.	13. 55	57.	43. 38	59.	13. 30	60.	43. 31
16		62.	13. 41	63.	44. 2	65.	14. 32	66.	45. 13	68.	16. 3	69.	47. 3	71.	18. 13	72.	49. 34
17		74.	21. 4														
22	The Sun.	48.	59. 14	50.	32. 43	59.	42. 8	41.	14. 32	42.	47. 7	44.	19. 53	45.	52. 49	47.	25. 56
23		61.	37. 0	63.	6. 53	72.	6. 23	53.	40. 14	55.	14. 15	56.	48. 26	58.	22. 47	59.	57. 18
24		74.	15. 49	75.	52. 4	77.	28. 29	79.	5. 3	80.	41. 48	82.	18. 42	83.	55. 45	85.	32. 58
25		87.	10. 20	88.	47. 53	90.	25. 35	92.	3. 26	93.	41. 27	95.	19. 37	96.	57. 55	98.	36. 22
26		100.	14. 57	101.	53. 42	103.	32. 34	105.	11. 35	106.	50. 43	108.	29. 59	110.	9. 21	111.	48. 51
27		113.	28. 28	115.	8. 12	116.	48. 1	118.	27. 57	120.	7. 58						
28		44.	28. 25	46.	6. 50	47.	45. 44	49.	25. 5	51.	4. 55	52.	45. 10	54.	25. 47	56.	6. 47
26	α Pegasi.	57.	48. 9	59.	29. 50	61.	11. 48	62.	54. 3	64.	36. 35	66.	19. 22	68.	2. 21	69.	45. 32
27		71.	28. 55														
28	α Arietis.	27.	58. 22	29.	44. 1	31.	29. 55	33.	16. 4	35.	2. 27	36.	49. 3	38.	35. 48	40.	22. 43
29		42.	9. 48	43.	56. 59	45.	44. 16	47.	31. 39	49.	19. 8	51.	6. 41	52.	54. 16	54.	41. 53
30		56.	29. 33														
30	Aldeba- ran.	24.	54. 51	26.	56. 35	28.	18. 51	30.	1. 41	31.	45. 4	33.	28. 52	35.	12. 58	36.	57. 21
31		38.	42. 1	40.	26. 46	42.	11. 36	43.	56. 31	45.	41. 31	47.	26. 32	49.	11. 29	50.	56. 23
P. 1		52.	41. 13														

[12] JANUARY 1787. XII.

Configurations of the SATELLITES of JUPITER
at Seven o' Clock in the Evening.

1				1.	3.	⊙		2.		4.
2	3.					⊙		1.	3.	
3	2.			1.		⊙				4.
4		3.		3.		⊙		1.		4.
5				3.1		⊙		3.		
6						⊙	1.	2.	3.	4.
7	1.0			2.		⊙				3.
8				4.2		⊙		4.		
9	3.		4.			⊙		1.	3.	
10		4.	3.	1.		⊙				2.
11	4.		3.	2.		⊙		1.		
12	4.			3.1		⊙		3.		
13	4.					⊙	1.	2.		
14		4.		2.	1.	⊙				3.
15	1.		4.	2.		⊙			3.	
16	4.0					⊙	2.	1.	4.	
17			3.	1.		⊙	2.		4.	
18			3.	2.		⊙		1.		4.
19			3.	1.		⊙		3.		4.
20						⊙		3.	2.	4.
21				2.	1.	⊙				3.
22	1.			2.		⊙			2.	4.
23						⊙	1.	2.	4.	
24			2.	1.		⊙	2.	4.		
25		3.	2.	4.		⊙		1.		
26	2.0		4.	1.		⊙				
27						⊙	3.	1.	2.	
28	4.			2.1		⊙				3.
29	4.					⊙	1.		2.	
30		4.				⊙		3.	2.	1.0
31			4.		1.	⊙		2.		

L FEBRUARY 1787. [13]

Days of the Month.	Days of the Week.	Sundays, Holidays, &c.	Phases of the Moon.	
			D. H. M.	
			Full Moon --	2. 0. 15
			Last Quarter --	9. 15. 48
			New Moon --	17. 14. 17
			First Quarter --	24. 12. 49
			Other Phenomena.	
			D. H. M.	
			2. 7. 17½	Im. ξ Ω * 13° N
			7. 50	Em. * 14° N
				of α's cent.
			22. 14	☾ ♄ Ω
			4. 19. 10	☾ ♄ Ω
			10. 18. 59	☾ ♄ M
			23. 0	☾ ♄ M
			11. 22. 32	☾ ☿ Ophiuchi.
			13. 4. 24	☾ ♄ ♄
			18. 3. 50	☾ enters ♄
			21. 12. 39	☾ ♄
			23. 20. 53	☾ ♄ Pleiadum.
			25. 16. 10	☾ ♄ 125°
			19. 41	☾ 132°
			27. 07. 46	☾ ♄ II
			07. 07. 0	M
			24. 12. 5	VI
			08. 12. 5	VI
			12. 12. 5	VI
			01. 22. 4	VI
			28. 22. 2	VI
			14. 22. 0	VI
			02. 22. 5	VI
			07. 22. 0	VI
			11. 22. 0	VI

[14.]		F E B R U A R Y 1787.				II.
Days of the Month.	Days of the Week.	Sun's Longitude.	Sun's Right Asc. in Time.	Sun's Declin. South.	Equat. of Time. Add.	Diff.
		S. D. M. S.	H. M. S.	D.M.S.	M. S.	S.
1	Th.	10. 12.39.24	21. 0.30,6	17. 1.48	14. 4,2	7,0
2	F.	10. 13.40.12	21. 4.34,3	16.44.29	14.11,2	6,2
3	Sa.	10. 14.40.59	21. 8.37,1	16.46.53	14.17,4	5,4
4	Su.	10. 15.41.45	21.12.39,1	16. 9. 0	14.22,8	4,7
5	M.	10. 16.42.29	21.16.40,3	15.50.50	14.27,5	3,9
6	Tu.	10. 17.43.12	21.20.40,7	15.32.24	14.31,4	3,0
7	W.	10. 18.43.54	21.24.40,3	15.13.43	14.34,4	2,2
8	Th.	10. 19.44.36	21.28.39,1	14.54.45	14.36,6	1,4
9	F.	10. 20.45.16	21.32.37,1	14.35.32	14.38,0	0,8
10	Sa.	10. 21.45.55	21.36.34,4	14.16. 5	14.38,8	0,0
11	Su.	10. 22.46.33	21.40.31,0	13.56.24	14.38,8	0,8
12	M.	10. 23.47.10	21.44.26,7	13.36.28	14.38,0	1,5
13	Tu.	10. 24.47.45	21.48.21,7	13.16.20	14.36,5	2,3
14	W.	10. 25.48.19	21.52.16,0	12.55.59	14.34,2	3,1
15	Th.	10. 26.48.52	21.56. 9,5	12.35.24	14.31,1	3,7
16	F.	10. 27.49.24	22. 0. 2,3	12.14.38	14.27,4	4,4
17	Sa.	10. 28.49.54	22. 3.54,5	11.53.40	14.23,0	5,2
18	Su.	10. 29.50.22	22. 7.45,9	11.32.31	14.17,8	5,8
19	M.	11. 0.50.48	22.11.36,6	11.11.11	14.12,0	6,5
20	Tu.	11. 1.51.13	22.15.26,6	10.49.40	14. 5,5	7,1
21	W.	11. 2.51.36	22.19.16,0	10.27.59	13.58,4	7,8
22	Th.	11. 3.51.57	22.23. 4,7	10. 6. 9	13.50,6	8,5
23	F.	11. 4.52.16	22.26.52,8	9.44.10	13.42,1	9,1
24	Sa.	11. 5.52.32	22.30.40,2	9.22. 2	13.33,0	9,8
25	Su.	11. 6.52.47	22.34.27,0	8.59.46	13.23,2	10,3
26	M.	11. 7.52.59	22.38.13,2	8.37.23	13.12,9	10,9
27	Tu.	11. 8.53. 9	22.41.58,8	8.14.52	13. 2,0	11,4
28	W.	11. 9.53.17	22.45.43,9	7.52.14	12.50,6	12,0

III. FEBRUARY 1787. [19]

Days	Semidia- meter of the Sun.	Time of D ^o passing the Meridian.	Hourly Motion of the Sun.	Logarithm of the Sun's Distance.	Place of the Moon's Node.
	M. S.	M. S.	M. S.		S. D. M.
1	16. 16, 5	1. 8, 1	2. 32, 2	9. 993812	9. 13. 0
7	16. 15, 6	1. 7, 4	2. 31, 8	9. 994273	9. 12. 41
13	16. 14, 4	1. 6, 7	2. 31, 5	9. 994808	9. 12. 22
19	16. 13, 1	1. 6, 1	2. 31, 0	9. 995381	9. 12. 3
25	16. 11, 7	1. 5, 6	2. 30, 5	9. 995985	9. 11. 44

ECLIPSES of the SATELLITES of JUPITER.

I. Satellite. Emerfions.		II. Satellite.		III. Satellite.	
Days	H. M. S.	Days	H. M. S.	Days	H. M. S.
2	0. 44. 17	*4	5. 31. 10 I	7	1. 31. 18 I
3	19. 13. 3	*4	8. 1. 2 E	7	3. 18. 40 E
5	13. 41. 51	7	18. 49. 23 I	14	5. 32. 50 I
*7	8. 10. 42	7	21. 19. 22 E	*14	7. 21. 6 E
9	2. 39. 36	*11	8. 7. 45 I	*21	9. 34. 56 I
10	21. 8. 32	*11	10. 37. 50 E	21	11. 24. 4 E
12	15. 37. 30	14	21. 26. 13 I	28	13. 37. 37 I
*14	10. 6. 31	14	23. 56. 25 E	28	15. 27. 43 E
16	4. 35. 34	*18	10. 44. 46 I	IV. Satellite. Conj.	
17	23. 4. 41	18	13. 15. 4 E		
19	17. 33. 47	22	0. 3. 24 I	1	23. 1 Inf.
21	12. 2. 58	22	2. 33. 48 E	*10	9. 26 Sup.
*23	6. 32. 11	25	13. 22. 7 I	18	17. 40 Inf.
25	1. 1. 23	25	15. 52. 38 E	27	4. 35 Sup.
26	19. 30. 37				
28	13. 59. 55				

[16] FEBRUARY 1787. IV.

Days.	Heliocen- tric Lon- gitude.	Heliocen- tric Lat- tude.	Geocen- tric Lon- gitude.	Geocen- tric Lat- titude.	Declina- tion.	Passage over Merid.
	S. D. M.	D. M.	S. D. M.	D. M.	D. M.	H. M.

MERCURY.						
1	8. 10. 18	2. 55 S	9. 23. 42	1. 4 S	22. 26 S	22. 45
4	8. 18. 33	3. 48	9. 28. 11	1. 22	21. 53	22. 52
7	8. 26. 52	4. 37	10. 2. 48	1. 37	21. 8	23. 0
10	9. 5. 18	5. 20	10. 7. 30	1. 49	20. 10	23. 8
13	9. 14. 1	5. 57	10. 12. 21	1. 58	19. 0	23. 16
16	9. 23. 5	6. 28	10. 17. 20	2. 4	17. 38	23. 25
19	10. 2. 39	6. 48	10. 22. 27	2. 7	16. 2	23. 33
22	10. 12. 48	6. 59	10. 27. 43	2. 6	14. 15	23. 42
25	10. 23. 43	6. 56	11. 3. 8	2. 0	12. 14	23. 52
28	11. 5. 34	6. 36	11. 8. 41	1. 50	10. 1	0. 1

VENUS.						
1	4. 29. 34	3. 16 N	9. 7. 48	6. 24 N	16. 50 S	21. 30
7	5. 9. 19	3. 22	9. 10. 2	5. 59	17. 7	21. 16
13	5. 19. 4	3. 23	9. 13. 17	5. 26	17. 23	21. 6
19	5. 28. 47	3. 17	9. 17. 18	4. 50	17. 33	21. 0
25	6. 8. 30	3. 6	9. 21. 56	4. 11	17. 33	20. 57

MARS.						
1	9. 2. 7	1. 17 S	9. 18. 24	0. 50 S	23. 1 S	22. 19
7	9. 5. 37	1. 22	9. 22. 59	0. 53	22. 22	22. 15
13	9. 9. 9	1. 26	9. 27. 35	0. 55	21. 34	22. 10
19	9. 12. 44	1. 31	10. 2. 12	0. 58	20. 38	22. 7
25	9. 16. 19	1. 34	10. 6. 49	1. 1	19. 35	22. 3

JUPITER.						
1	1. 23. 55	0. 56 S	1. 12. 34	0. 57 S	14. 43 N	5. 40
7	1. 24. 27	0. 55	1. 13. 9	0. 56	14. 55	5. 18
13	1. 24. 59	0. 55	1. 13. 50	0. 54	15. 9	4. 57
19	1. 25. 31	0. 54	1. 14. 36	0. 52	15. 24	4. 37
25	1. 26. 4	0. 54	1. 15. 28	0. 51	15. 41	4. 18

SATURN. 7 ^d . 20 ^h .						
1	10. 19. 22	1. 10 S	10. 18. 45	1. 3 S	16. 13 S	0. 26
7	10. 19. 33	1. 10	10. 19. 29	1. 4	16. 0	0. 4
13	10. 19. 44	1. 10	10. 20. 12	1. 4	15. 47	23. 40
19	10. 19. 56	1. 11	10. 20. 55	1. 4	15. 33	23. 20
25	10. 20. 7	1. 11	10. 21. 38	1. 5	15. 20	23. 0

V. FEBRUARY 1787. [17]					
Days of the Month.	Days of the Week.	Moon's Longitude at Noon.	Moon's Longitude at Midnight.	Moon's Latitude at Noon.	Moon's Latitude at Midnight.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
1	Th.	3. 29. 27. 43	4. 6. 31. 37	1. 22. 38 S	1. 59. 17 S
2	F.	4. 13. 32. 13	4. 20. 29. 2	2. 33. 48	3. 5. 41
3	Sa.	4. 27. 21. 33	5. 4. 9. 24	3. 34. 29	3. 59. 53
4	Su.	5. 10. 52. 16	5. 17. 30. 0	4. 21. 36	4. 39. 30
5	M.	5. 24. 2. 29	6. 0. 29. 43	4. 53. 28	5. 3. 29
6	Tu.	6. 6. 51. 52	6. 13. 9. 8	5. 9. 35	5. 11. 50
7	W.	6. 19. 21. 49	6. 25. 30. 19	5. 10. 24	5. 5. 24
8	Th.	7. 1. 35. 7	7. 7. 36. 41	4. 56. 58	4. 45. 21
9	F.	7. 13. 35. 38	7. 19. 32. 31	4. 30. 40	4. 13. 9
10	Sa.	7. 25. 28. 2	8. 1. 22. 47	3. 52. 59	3. 30. 22
11	Su.	8. 7. 17. 26	8. 13. 12. 39	3. 5. 31	2. 38. 38
12	M.	8. 19. 9. 4	8. 25. 7. 19	2. 9. 58	1. 39. 44
13	Tu.	9. 1. 7. 56	9. 7. 11. 31	1. 8. 13	0. 35. 42 S
14	W.	9. 13. 18. 31	9. 19. 29. 23	0. 2. 30 S	0. 31. 2 N
15	Th.	9. 25. 44. 28	10. 2. 4. 2	1. 4. 32 N	1. 37. 37
16	F.	10. 8. 28. 16	10. 14. 57. 18	2. 9. 49	2. 42. 43
17	Sa.	10. 21. 31. 5	10. 28. 9. 35	3. 9. 49	3. 36. 39
18	Su.	11. 4. 52. 32	11. 11. 39. 43	4. 0. 47	4. 21. 43
19	M.	11. 18. 30. 47	11. 25. 25. 16	4. 39. 6	4. 52. 33
20	Tu.	0. 2. 22. 44	0. 9. 22. 42	5. 1. 46	5. 6. 31
21	W.	0. 16. 24. 34	0. 23. 27. 56	5. 6. 42	5. 2. 13
22	Th.	1. 0. 32. 18	1. 7. 37. 14	4. 53. 6	4. 39. 31
23	F.	1. 14. 42. 21	1. 21. 47. 23	4. 21. 37	3. 59. 44
24	Sa.	1. 28. 52. 1	2. 5. 56. 6	3. 34. 10	3. 5. 21
25	Su.	2. 12. 59. 24	2. 20. 1. 52	2. 33. 46	1. 59. 52
26	M.	2. 27. 3. 17	3. 4. 3. 38	1. 24. 16	0. 47. 30 N
27	Tu.	3. 11. 2. 42	3. 18. 0. 27	0. 10. 8 N	0. 27. 13 S
28	W.	3. 24. 56. 36	4. 1. 51. 5	1. 3. 59 S	1. 39. 37

18] FEBRUARY 1787. VI.							
Days of the Month.	Days of the Week.	D's Age.	D's Passage over Merid.	D's Right Ascension at Noon.	D's Right Ascens. at Midn.	D's Declination at Noon.	D's Declination at Midn.
			H. M.	D. M.	D. M.	D. M.	D. M.
1	Th.	15	11. 30	121. 19	128. 24	18. 56 N	16. 44 N
2	F.	16	12. 21	135. 15	141. 53	14. 19	11. 45
3	Sa.	17	13. 10	148. 19	154. 35	9. 3	6. 16
4	Su.	18	13. 56	160. 41	166. 41	3. 28 N	0. 39 N
5	M.	19	14. 40	172. 35	178. 26	2. 7 S	4. 50 S
6	Tu.	20	15. 24	184. 15	190. 3	7. 28	9. 59
7	W.	21	16. 7	195. 52	201. 43	12. 22	14. 36
8	Th.	22	16. 52	207. 38	213. 37	16. 40	18. 33
9	F.	23	17. 39	219. 41	225. 51	20. 14	21. 42
10	Sa.	24	18. 28	232. 7	238. 29	22. 55	23. 53
11	Su.	25	19. 18	244. 55	251. 26	24. 36	25. 2
12	M.	26	20. 9	258. 0	264. 37	25. 11	25. 2
13	Tu.	27	21. 0	271. 15	277. 52	24. 36	23. 52
14	W.	28	21. 49	284. 28	291. 1	22. 50	21. 32
15	Th.	29	22. 38	297. 31	303. 57	19. 58	18. 8
16	F.	30	23. 26	310. 19	316. 37	16. 4	13. 48
17	Sa.	1	0	322. 52	329. 4	11. 21	8. 44
18	Su.	2	0. 14	335. 15	341. 25	6. 0	3. 10 S
19	M.	3	1. 1	347. 37	353. 52	0. 16 S	2. 39 N
20	Tu.	4	1. 49	0. 10	6. 35	5. 34 N	8. 25
21	W.	5	2. 39	13. 7	19. 48	11. 11	13. 48
22	Th.	6	3. 31	26. 39	33. 40	16. 15	18. 28
23	F.	7	4. 27	40. 52	48. 15	20. 26	22. 5
24	Sa.	8	5. 26	55. 47	63. 27	23. 24	24. 22
25	Su.	9	6. 26	71. 12	78. 59	24. 55	25. 5
26	M.	10	7. 26	86. 45	94. 27	24. 50	24. 12
27	Tu.	11	8. 25	102. 1	109. 27	23. 11	21. 48
28	W.	12	9. 21	116. 41	123. 43	20. 7	18. 9

VII. FEBRUARY 1787. [19]

Days of the Month.	Days of the Week.	Semid. at Noon. M. S.	Semid. at Midnight. M. S.	Hor. Par. at Noon. M. S.	Hor. Par. at Midnight. M. S.	Proport. Lo- far at Noon.	Proport. Lo- far at Midn.
1	Th.	16. 10	16. 7	59. 21	59. 7	4819	4835
2	F.	16. 2	15. 57	58. 50	58. 32	4856	4878
3	Sa.	15. 52	15. 46	58. 12	57. 50	4903	4931
4	Su.	15. 40	15. 34	57. 28	57. 6	4958	4986
5	M.	15. 27	15. 21	56. 43	56. 21	5015	5044
6	Tu.	15. 15	15. 10	56. 0	55. 40	5071	5097
7	W.	15. 5	15. 1	55. 22	55. 7	5120	5140
8	Th.	14. 57	14. 54	54. 53	54. 42	5158	5173
9	F.	14. 52	14. 50	54. 33	54. 27	5185	5193
10	Sa.	14. 49	14. 49	54. 23	54. 22	5198	5199
11	Su.	14. 49	14. 50	54. 24	54. 28	5197	5191
12	M.	14. 52	14. 55	54. 34	54. 43	5183	5171
13	Tu.	14. 58	15. 1	54. 54	55. 7	5157	5140
14	W.	15. 5	15. 10	55. 22	55. 39	5120	5098
15	Th.	15. 14	15. 19	55. 56	56. 14	5076	5053
16	F.	15. 25	15. 30	56. 33	56. 52	5028	5004
17	Sa.	15. 35	15. 40	57. 11	57. 29	4980	4957
18	Su.	15. 44	15. 49	57. 46	58. 2	4936	4916
19	M.	15. 53	15. 57	58. 17	58. 31	4897	4880
20	Tu.	16. 0	16. 3	58. 44	58. 55	4864	4850
21	W.	16. 6	16. 8	59. 4	59. 12	4839	4830
22	Th.	16. 9	16. 10	59. 17	59. 20	4823	4820
23	F.	16. 11	16. 11	59. 22	59. 23	4817	4816
24	Sa.	16. 11	16. 11	59. 23	59. 23	4816	4816
25	Su.	16. 10	16. 9	59. 21	59. 17	4819	4823
26	M.	16. 8	16. 7	59. 13	59. 8	4828	4834
27	Tu.	16. 5	16. 3	59. 1	58. 53	4843	4853
28	W.	16. 0	15. 58	58. 44	58. 34	4864	4876

Distances of γ 's Center from Sun, and from Stars east of her.

Stars Names.	Noon.	3 Hours.	6 Hours.	9 Hours.	12 Hours.	15 Hours.	18 Hours.	21 Hours.
Days.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
1	81. 22. 35	79. 36. 6	77. 49. 51	76. 3. 47	74. 17. 57	72. 32. 20	70. 46. 58	69. 1. 51
2	67. 16. 59	65. 32. 22	63. 48. 2	62. 3. 59	60. 20. 14	58. 36. 47	56. 53. 40	55. 10. 51
3	53. 28. 21	51. 46. 9	50. 4. 18	48. 22. 46	46. 41. 35	45. 0. 46	43. 20. 19	41. 40. 14
4	40. 0. 30	38. 21. 8	36. 42. 8	35. 3. 31	33. 25. 46	31. 47. 24	30. 9. 56	28. 32. 53
5	26. 56. 14	25. 20. 0	23. 44. 13	22. 8. 52	20. 33. 57			
6	59. 41. 50	58. 7. 30	56. 33. 27	54. 59. 43	53. 26. 16	51. 53. 7	50. 20. 14	48. 47. 38
7	47. 15. 18	45. 43. 14	44. 11. 24	42. 39. 49	41. 8. 29	39. 37. 22	38. 6. 28	36. 35. 46
8	35. 5. 17	33. 35. 0	32. 4. 53	30. 34. 57	29. 5. 12	27. 35. 36	26. 6. 9	24. 36. 50
9	23. 7. 41	21. 38. 40	20. 9. 46	18. 41. 0	17. 12. 21			
10	119. 14. 12	117. 49. 47	116. 25. 36	115. 1. 40	113. 37. 58	112. 14. 29	110. 51. 13	109. 28. 9
11	108. 5. 17	106. 42. 37	105. 20. 6	103. 57. 46	102. 35. 36	101. 13. 35	99. 51. 41	98. 29. 56
12	97. 8. 18	95. 46. 47	94. 25. 22	93. 4. 2	91. 42. 47	90. 21. 36	89. 0. 29	87. 39. 24
13	86. 18. 23	84. 57. 23	83. 36. 25	82. 15. 26	80. 54. 29	79. 33. 31	78. 12. 31	76. 51. 29
14	75. 30. 25	74. 9. 18	72. 48. 7	71. 26. 51	70. 5. 32	68. 44. 8	67. 22. 37	66. 1. 0

Distances of γ 's Center from Sun, and from Stars west of her.

Days.	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
1	Aldebaran.	52. 41. 13	54. 26. 0	56. 10. 38	57. 55. 8	59. 39. 30	61. 23. 42	63. 7. 42	64. 51. 31								
2		66. 35. 9	68. 18. 34	70. 1. 43	71. 44. 39	73. 27. 19	75. 9. 43	76. 51. 50	78. 33. 39								
3		80. 15. 10															
3	Pollux.	38. 23. 31	40. 3. 57	41. 44. 10	43. 24. 9	45. 3. 57	46. 43. 30	48. 22. 47	50. 1. 49								
4		51. 40. 36	53. 19. 5	54. 57. 16	56. 35. 10	58. 12. 47	59. 50. 6	61. 27. 5	63. 3. 45								
5		64. 40. 6															
5	Regulus.	27. 39. 0	29. 14. 57	30. 50. 39	32. 26. 6	34. 1. 17	35. 36. 13	37. 10. 52	38. 45. 16								
6		40. 19. 24	41. 53. 15	43. 26. 50	45. 0. 8	46. 33. 11	48. 5. 57	49. 38. 28	51. 10. 44								
7		52. 42. 45	54. 14. 32	55. 46. 5	57. 17. 25	58. 48. 31	60. 19. 24	61. 50. 5	63. 20. 34								
8		64. 50. 51	66. 20. 57	67. 50. 54	69. 20. 40	70. 50. 17	72. 19. 45	73. 49. 6	75. 18. 19								
9		76. 47. 24															
9		22. 48. 30	24. 16. 53	25. 45. 15	27. 13. 36	28. 41. 56	30. 10. 15	31. 38. 35	33. 6. 53								
10	Spica ν	34. 35. 12	36. 3. 30	37. 31. 49	39. 0. 9	40. 28. 30	41. 56. 53	43. 25. 18	44. 53. 47								
11		46. 22. 18	47. 50. 53	49. 19. 34	50. 48. 19	52. 17. 10	53. 46. 6	55. 15. 10	56. 44. 20								
12		58. 13. 38	59. 43. 4	61. 12. 39	62. 42. 23	64. 12. 17											
12	Antares.																
13		24. 32. 23	26. 3. 10	27. 34. 11	29. 5. 24	30. 36. 51	32. 8. 31	33. 40. 26	35. 12. 35								
14		36. 44. 58	38. 17. 36	39. 50. 30	41. 23. 39	42. 57. 3	44. 30. 44	46. 4. 40	47. 38. 53								

XI. FEBRUARY 1787. [23]

Days.	Stars Names.	Noon.	3 Hours.	6 Hours.	9 Hours.	12 Hours.	15 Hours.	18 Hours.	21 Hours.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
15	Antares.	49. 13. 22	50. 48. 8	52. 23. 9	53. 58. 29	55. 34. 5	57. 9. 58	58. 46. 7	60. 22. 34
16		61. 59. 17							
20									
21		43. 47. 19	45. 24. 39	47. 2. 5	48. 39. 37	50. 17. 15	38. 56. 7	40. 33. 3	42. 10. 7
22		56. 48. 33	58. 26. 33	60. 4. 36	61. 42. 42	63. 20. 51	51. 54. 58	53. 32. 45	55. 10. 37
23	The Sun.	69. 53. 44	71. 32. 2	73. 10. 20	74. 48. 40	76. 27. 0	64. 59. 2	66. 37. 14	68. 15. 28
24		83. 0. 18	84. 38. 37	86. 16. 55	87. 55. 12	89. 33. 28	78. 5. 20	79. 43. 39	81. 21. 59
25		96. 6. 15	97. 44. 24	99. 22. 29	101. 0. 33	102. 38. 31	91. 11. 42	92. 49. 55	94. 28. 6
26		109. 9. 57	110. 47. 40	112. 25. 19	114. 2. 54	115. 40. 24	104. 16. 28	105. 54. 21	107. 32. 11
27							117. 17. 49	118. 55. 9	120. 32. 24
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[24] FEBRUARY 1787. XII.

Configurations of the SATELLITES of JUPITER
at Seven o' Clock in the Evening.

1		3.	2.	4.	⊙	1.			
2			3.	1.	2.	⊙	4.		
3	3.0				⊙	1.	2.	4.	
4	2.0			1.	⊙		3.	4.	
5			1.		⊙	1.		3.	4.
6				1.	⊙	2.	3.		4.
7	1.0			3.	⊙	2.			4.
8		3.	2.		⊙	1.			4.
9		3.		1.	⊙		4.		
10				3.	⊙	1.	2.		
11	2.0		4.	1.	⊙		3.		
12		4.		2.	⊙	1.		3.	
13	4.			1.	⊙	2.	3.		
14	4.				⊙		2.		1.0 3.0
15	4.	3.	2.		⊙	1.			
16	4.	3.	2.	1.	⊙				
17		4.		3.	⊙	1.	2.		
18			1.	4.	⊙	2.	3.		
19			2.		⊙	1.		3.	
20				1.	⊙	2.	3.	4.	
21				3.	⊙	1.	2.		4.
22	1.0		1.	2.	⊙				4.
23		3.	2.	1.	⊙				4.
24			3.		⊙	1.	2.		4.
25			1.		⊙	2.	3.		4.
26			2.		⊙	1.	4.	3.	
27	2.0			1.	⊙			3.	
28			4.		⊙	3.	1.	2.	

I. MARCH 1787. [25]

Days of the Month.	Days of the Week.	Sundays, Holidays, &c.	Phases of the Moon.
			D. H.M.
			Full Moon — 3. 13. 51
			Last Quarter — 11. 12. 54
			New Moon — 19. 2. 48
			First Quarter — 25. 20. 8
			Other Phenomena.
			D.H.M.
1	Th.	David.	1. 17. 31 ☾ ☿ ♎
2	F.	Chad.	22. 7 ☾ ☿ ♎
3	Sa.		2. 6. 10½ Em. of ☿ ♎
			* 1' N. of ☾'s cent.
4	Su.	2d Sunday in Lent.	4. 4. 22 ☾ ☿ ♎
5	M.		10. 3. 15 ☾ ☿ ♎
6	Tu.		11. 6. 52 ☾ ☿ ♎
7	W.	Perpetua.	8. 46 ☾ ☿ ♎
8	Th.		12. 12. 59 ☾ ☿ ♎
9	F.		13. 6. 15 ☾ ☿ ♎
10	Sa.		15. 9. 50 ☾ ☿ ♎
			17. 1. 12 ☾ ☿ ♎
11	Su.	3d Sunday in Lent.	18. ☿ ☿ d. Lat. 4'
12	M.	Greg. M.	19. ☿ ☿ d. Lat. 3'
13	Tu.		20. 4. 14 ☿ enters ♍
14	W.		21. ☿ ☿ d. Lat. 53'
15	Th.		23. 3. 2 ☿ ☿ Pleiadum
16	F.		24. 21. 42 ☿ 125 ☿
17	Sa.		25. 1. 12 ☿ 132 ☿
			26. 13. 20 ☿ ☿ II
18	Su.	4th Su. in Lent. Edw. K.	28. 23. 58 ☿ ☿ ♎
19	M.	[of W. Sax.	29. 4. 40 ☿ ☿ ♎
20	Tu.		13. 49 ☿ ☿ ♎
21	W.	Benedict.	31. 11. 23 Im. of ☿ ♎
22	Th.		* 14' S.
23	F.		12. 2½ Em. * 11'S. of ☾'s cent.
24	Sa.		
25	Su.	5th Sunday in Lent. Annun.	
26	M.	[of V. Mary.	
27	Tu.		
28	W.		
29	Th.		
30	F.	Camb. Term ends.	
31	Sa.	Oxf. Term ends.	

[26]		M A R C H 1787.				II.
Days of the Month.	Days of the Week.	Sun's Longitude.	Sun's Right Asc. in Time.	Sun's Declin. South.	Equat. of Time Add.	Diff.
		S. D.M. S.	H. M. S.	D. M. S.	M. S.	S.
1	Th.	11. 10.53.23	22.49.28,4	7. 29. 29	12.38,6	
2	F.	11. 11.53.27	22.53.12,4	7. 6. 37	12.26,1	12,5
3	Sa.	11. 12.53.29	22.56.55,9	6. 43. 40	12.13,1	13,0
4	Su.	11. 13.53.29	23. 0.38,9	6. 20. 38	11.59,6	13,5
5	M.	11. 14.53.27	23. 4.21,5	5. 57. 30	11.45,6	14,0
6	Tu.	11. 15.53.23	23. 8. 3,6	5. 34. 17	11.31,2	14,4
7	W.	11. 16.53.17	23.11.45,4	5. 11. 0	11.16,5	14,7
8	Th.	11. 17.53.10	23.15.26,8	4. 47. 38	11. 1,4	15,1
9	F.	11. 18.53. 1	23.19. 7,9	4. 24. 12	10.46,0	15,4
10	Sa.	11. 19.52.51	23.22.48,6	4. 0. 44	10.30,2	15,8
11	Su.	11. 20.52.39	23.26.29,0	3. 37. 12	10.14,0	16,2
12	M.	11. 21.52.25	23.30. 9,0	3. 13. 38	9.57,5	16,5
13	Tu.	11. 22.52. 9	23.33.48,8	2. 50. 1	9.40,8	16,7
14	W.	11. 23.51.52	23.37.28,4	2. 26. 22	9.23,9	16,9
15	Th.	11. 24.51.33	23.41. 7,7	2. 2. 41	9. 6,7	17,2
16	F.	11. 25.51.12	23.44.46,8	1. 39. 0	8.49,3	17,4
17	Sa.	11. 26.50.50	23.48.25,8	1. 15. 17	8.31,8	17,5
18	Su.	11. 27.50.26	23.52. 4,6	0. 51. 36	8.14,1	17,7
19	M.	11. 28.50. 0	23.55.43,2	0. 27. 52	7.56,2	17,9
20	Tu.	11. 29.49.31	23.59.21,6	0. 4. 10	7.38,1	18,1
21	W.	0. 0.49. 0	0. 2.59,8	North. 0. 19. 31	7.19,8	18,3
22	Th.	0. 1.48.27	0. 6.37,9	0. 43. 11	7. 1,4	18,4
23	F.	0. 2.47.52	0.10.16,0	1. 6. 50	6.42,9	18,5
24	Sa.	0. 3.47.15	0.13.54,0	1. 30. 27	6.24,4	18,5
25	Su.	0. 4.46.35	0.17.31,9	1. 54. 1	6. 5,8	18,6
26	M.	0. 5.45.53	0.21. 9,8	2. 17. 32	5.47,2	18,6
27	Tu.	0. 6.45. 8	0.24.47,6	2. 41. 1	5.28,5	18,7
28	W.	0. 7.44.21	0.28.25,4	3. 4. 27	5. 9,8	18,7
29	Th.	0. 8.43.32	0.32. 3,2	3. 27. 49	4.51,1	18,7
30	F.	0. 9.42.40	0.35.41,1	3. 51. 6	4.32,5	18,6
31	Sa.	0. 10.41.46	0.39.19,0	4. 14. 19	4.13,9	18,6

III. MARCH 1787. [27]

Days	Semidia- meter of the Sun.	Time of D ^o passing the Meridian.	Hourly Motion of the Sun.	Logarithm of the Sun's Distance.	Place of the Moon's Node.
	M. S.	M. S.	M. S.		S. D. M.
1	16. 10. 7	1. 5. 3	2. 30. 2	9.996408	9. 11. 31
7	16. 9. 3	1. 4. 9	2. 29. 7	9.997096	9. 11. 12
13	16. 7. 6	1. 4. 6	2. 29. 2	9.997826	9. 10. 53
19	16. 6. 0	1. 4. 4	2. 28. 8	9.998574	9. 10. 34
25	16. 4. 3	1. 4. 3	2. 28. 3	9.999307	9. 10. 15

ECLIPSES of the SATELLITES of JUPITER.

I. Satellite. Emerfions.		II. Satellite.		III. Satellite.	
Days	H. M. S.	Days	H. M. S.	Days	H. M. S.
*2	8. 29. 13	1	2. 40. 51 I	7	17. 40. 33 I
4	2. 58. 32	1	5. 11. 27 E	7	19. 31. 41 E
5	21. 27. 54	4	15. 59. 42 I	14	21. 43. 48 I
7	15. 57. 17	4	18. 30. 24 E	14	23. 35. 55 E
9	10. 26. 41		Emerfions.	22	1. 47. 12 I
11	4. 56. 6	*8	7. 49. 23	22	3. 40. 21 E
12	23. 25. 32	11	21. 8. 27	29	5. 50. 38 I
14	17. 54. 58	15	10. 27. 31	*29	7. 44. 46 E
16	12. 24. 24	18	23. 46. 38	IV. Satellite. Conj.	
*18	6. 53. 52	22	13. 5. 44		
20	1. 23. 20	26	2. 24. 47		
21	19. 52. 47	29	15. 43. 48		
23	14. 22. 14				
*25	8. 51. 42				
27	3. 21. 10				
28	21. 50. 38				
30	16. 20. 6			7	13. 12 Inf.
				16	0. 28 Sup.
				*24	9. 16 Inf.

[28] MARCH 1787. IV.

Days.	Heliocen- tric Lon- gitude.	Heliocen- tric Lati- tude.	Geocen- tric Lon- gitude.	Geocen- tric Lati- tude.	Declina- tion.	Passage over Merid.
	S. D. M.	D. M.	S. D. M.	D. M.	D. M.	H. M.

Sup. δ 1^d. $8\frac{1}{2}^h$. MERCURY. Gr. El. 28^d.

1	11. 9. 45	6. 24 S	11. 10. 35	1. 46 S	9. 14 S	0. 2
4	11. 23. 4	5. 35	11. 16. 19	1. 29	6. 46	0. 11
7	0. 7. 40	4. 20	11. 22. 10	1. 8	4. 9	0. 21
10	0. 23. 37	2. 39	11. 28. 4	0. 41	1. 24 S	0. 31
13	1. 10. 53	0. 36 S	0. 3. 54	0. 9 S	1. 25 N	0. 41
16	1. 29. 12	1. 38 N	0. 9. 32	0. 26 N	4. 11	0. 50
19	2. 18. 4	3. 45	0. 14. 48	1. 3	6. 48	0. 57
22	3. 6. 53	5. 27	0. 19. 28	1. 40	9. 10	1. 3
25	3. 25. 0	6. 33	0. 23. 23	2. 14	11. 10	1. 6
28	4. 11. 56	6. 59	0. 26. 24	2. 43	12. 43	1. 5
31	4. 27. 28	6. 51	0. 28. 22	3. 3	13. 45	1. 1

VENUS. Gr. Elong. 17^d.

1	6. 14. 57	2. 56 N	9. 25. 19	3. 44 N	17. 26 S	20. 57
7	6. 24. 37	2. 36	10. 0. 40	3. 4	17. 2	20. 57
13	7. 4. 15	2. 12	10. 6. 22	2. 25	16. 22	20. 59
19	7. 13. 52	1. 45	10. 12. 20	1. 47	15. 23	21. 2
25	7. 23. 27	1. 14	10. 18. 29	1. 11	14. 10	21. 5

MARS.

1	9. 18. 44	1. 37 S	10. 9. 54	1. 3 S	18. 48 S	22. 1
7	9. 22. 23	1. 40	10. 14. 33	1. 6	17. 32	21. 57
13	9. 26. 4	1. 43	10. 19. 12	1. 8	16. 10	21. 54
19	9. 29. 46	1. 45	10. 23. 51	1. 10	14. 42	21. 50
25	10. 3. 29	1. 47	10. 28. 31	1. 12	13. 8	21. 46

JUPITER.

1	1. 26. 25	0. 53 S	1. 16. 5	0. 50 S	15. 52 N	4. 5
7	1. 26. 56	0. 53	1. 17. 4	0. 49	16. 10	3. 47
13	1. 27. 29	0. 52	1. 18. 7	0. 48	16. 29	3. 29
19	1. 28. 1	0. 52	1. 19. 13	0. 47	16. 48	3. 12
25	1. 28. 33	0. 51	1. 20. 23	0. 45	17. 8	2. 55

SATURN.

1	10. 20. 14	1. 12 S	10. 22. 6	1. 5 S	15. 11 S	22. 47
7	10. 20. 26	1. 12	10. 22. 47	1. 6	14. 58	22. 27
13	10. 20. 37	1. 12	10. 23. 27	1. 7	14. 46	22. 8
19	10. 20. 48	1. 13	10. 24. 6	1. 7	14. 34	21. 49
25	10. 20. 59	1. 13	10. 24. 43	1. 8	14. 22	21. 29

V.		MARCH 1787.				[29]
Days of the Month.	Days of the Week.	Moon's Longitude at Noon.	Moon's Longitude at Midnight.	Moon's Latitude at Noon.	Moon's Latitude at Midn.	
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.	
1	Th.	4. 8. 43. 34	4. 15. 33. 52	2. 13. 35 S	2. 45. 23 S	
2	F.	4. 22. 21. 40	4. 29. 6. 40	3. 14. 34	3. 40. 47	
3	Sa.	5. 5. 48. 39	5. 12. 27. 16	4. 3. 41	4. 23. 4	
4	Su.	5. 19. 2. 20	5. 25. 33. 34	4. 38. 43	4. 50. 33	
5	M.	6. 2. 0. 54	6. 8. 24. 7	4. 58. 31	5. 2. 37	
6	Tu.	6. 14. 43. 21	6. 20. 58. 31	5. 2. 58	4. 59. 38	
7	W.	6. 27. 9. 51	7. 3. 17. 31	4. 52. 48	4. 42. 39	
8	Th.	7. 9. 21. 52	7. 15. 23. 12	4. 29. 21	4. 13. 10	
9	F.	7. 21. 22. 4	7. 27. 18. 52	3. 54. 16	3. 32. 55	
10	Sa.	8. 3. 14. 16	8. 9. 8. 47	3. 9. 20	2. 43. 45	
11	Su.	8. 15. 3. 10	8. 25. 57. 58	2. 16. 25	1. 47. 34	
12	M.	8. 26. 54. 1	9. 2. 51. 52	1. 17. 27	0. 46. 21 S	
13	Tu.	9. 8. 52. 18	9. 14. 55. 55	0. 14. 30 S	0. 17. 46 N	
14	W.	9. 21. 3. 25	9. 27. 15. 23	0. 50. 8 N	1. 22. 18	
15	Th.	10. 3. 32. 18	10. 9. 54. 40	1. 53. 50	2. 24. 24	
16	F.	10. 16. 22. 51	10. 22. 57. 2	2. 53. 30	3. 20. 44	
17	Sa.	10. 29. 37. 23	11. 6. 23. 50	3. 45. 37	4. 7. 41	
18	Su.	11. 13. 16. 12	11. 20. 14. 9	4. 26. 28	4. 41. 31	
19	M.	11. 27. 17. 11	0. 4. 24. 40	4. 52. 30	4. 59. 2	
20	Tu.	0. 11. 35. 51	0. 18. 49. 50	5. 0. 54	4. 57. 58	
21	W.	0. 26. 5. 48	1. 3. 22. 48	4. 50. 13	4. 37. 44	
22	Th.	1. 10. 40. 0	1. 17. 56. 35	4. 20. 42	3. 59. 26	
23	F.	1. 25. 11. 51	2. 2. 25. 12	3. 34. 21	3. 5. 53	
24	Sa.	2. 9. 36. 13	2. 16. 44. 29	2. 34. 36	2. 1. 3	
25	Su.	2. 23. 49. 51	3. 0. 52. 6	1. 25. 50	0. 49. 33 N	
26	M.	3. 7. 51. 15	3. 14. 47. 15	0. 12. 46 N	0. 23. 56 S	
27	Tu.	3. 21. 40. 12	3. 28. 30. 6	0. 59. 59 S	1. 34. 54	
28	W.	4. 5. 17. 8	4. 12. 1. 14	2. 8. 11	2. 39. 24	
29	Th.	4. 18. 42. 36	4. 25. 21. 11	3. 8. 10	3. 34. 8	
30	F.	5. 1. 57. 2	5. 8. 30. 10	3. 57. 1	4. 16. 34	
31	Sa.	5. 15. 0. 33	5. 21. 28. 6	4. 32. 36	4. 45. 0	

[30]		MARCH 1787				VI	
Days of the Month.	Days of the Week.	D's Age.	D's Pairs age over Merid.	D's Right Ascen. at Noon.	D's Right Ascen. at Midn.	D's Declination at Noon.	D's Declination at Midn.
			H. M.	D. M.	D. M.	D. M.	D. M.
1	Th.	13	10. 14	130. 33	137. 12	15. 57 N	13. 33 N
2	F.	14	11. 3	143. 39	149. 57	11. 0	8. 21
3	Sa.	15	11. 49	156. 6	162. 9	5. 36	2. 50 N
4	Su.	16	12. 34	168. 6	174. 0	0. 4 N	2. 41 S
5	M.	17	13. 19	179. 52	185. 43	5. 22 S	7. 58
6	Tu.	18	14. 3	191. 34	197. 27	10. 28	12. 49
7	W.	19	14. 49	203. 23	209. 23	15. 1	17. 3
8	Th.	20	15. 36	215. 27	221. 36	18. 53	20. 30
9	F.	21	16. 24	227. 50	234. 9	21. 53	23. 2
10	Sa.	22	17. 13	240. 32	246. 59	23. 55	24. 33
11	Su.	23	18. 3	253. 29	260. 2	24. 53	24. 57
12	M.	24	18. 54	266. 35	273. 8	24. 43	24. 12
13	Tu.	25	19. 44	279. 40	286. 10	23. 25	22. 20
14	W.	26	20. 33	292. 37	299. 2	20. 59	19. 23
15	Th.	27	21. 22	305. 23	311. 41	17. 32	15. 28
16	F.	28	22. 10	317. 57	324. 11	13. 11	10. 43
17	Sa.	29	22. 57	330. 24	336. 38	8. 6	5. 20 S
18	Su.	30	23. 46	342. 53	349. 11	2. 29 S	0. 26 N
19	M.	1	0	355. 34	2. 3	3. 23 N	6. 19
20	Tu.	2	0. 37	8. 40	15. 26	9. 12	11. 58
21	W.	3	1. 30	22. 23	29. 30	14. 35	17. 0
22	Th.	4	2. 26	36. 48	44. 17	19. 20	21. 2
23	F.	5	3. 25	51. 55	59. 40	22. 33	23. 42
24	Sa.	6	4. 27	67. 31	75. 23	24. 28	24. 49
25	Su.	7	5. 28	83. 13	90. 57	24. 45	24. 17
26	M.	8	6. 27	98. 34	106. 0	23. 27	22. 15
27	Tu.	9	7. 24	113. 15	120. 17	20. 44	18. 56
28	W.	10	8. 17	127. 6	133. 43	16. 54	14. 40
29	Th.	11	9. 6	140. 9	146. 25	12. 15	9. 43
30	F.	12	9. 52	152. 32	158. 32	7. 6	4. 25 N
31	Sa.	13	10. 37	164. 27	170. 17	1. 43 N	0. 59 S

VII

MARCH 1787.

[31]

Days of the Month.	Days of the Week.	Semid. d at Noon.	Semid. d at Mid-night.	Hor. Par. d at Noon.	Hor. Par. d at Midnight.	Par. at Noon.	Proport. Lo. at Noon.	Par. at Midn.	Proport. Lo. at Midn.
		M. S.	M. S.	M. S.	M. S.				
1	Th.	15. 54	15. 51	58. 22	58. 9	4891	4907		
2	F.	15. 47	15. 43	57. 56	57. 41	4923	4942		
3	Sa.	15. 39	15. 34	57. 25	57. 8	4962	4984		
4	Su.	15. 29	15. 24	56. 50	56. 32	5006	5029		
5	M.	15. 19	15. 15	56. 15	55. 58	5051	5073		
6	Tu.	15. 11	15. 6	55. 42	55. 26	5094	5118		
7	W.	15. 2	14. 59	55. 12	54. 58	5133	5152		
8	Th.	14. 56	14. 53	54. 47	54. 37	5166	5179		
9	F.	14. 51	14. 50	54. 30	54. 25	5189	5195		
10	Sa.	14. 49	14. 49	54. 22	54. 22	5199	5199		
11	Su.	14. 49	14. 51	54. 24	54. 29	5197	5190		
12	M.	14. 53	14. 56	54. 37	54. 47	5179	5166		
13	Tu.	14. 59	15. 3	55. 6	55. 15	5149	5129		
14	W.	15. 8	15. 13	55. 32	55. 51	5107	5082		
15	Th.	15. 18	15. 24	56. 12	56. 34	5055	5027		
16	F.	15. 31	15. 37	56. 57	57. 20	4998	4968		
17	Sa.	15. 44	15. 50	57. 44	58. 7	4938	4910		
18	Su.	15. 56	16. 2	58. 29	58. 50	4882	4856		
19	M.	16. 7	16. 11	59. 9	59. 25	4833	4813		
20	Tu.	16. 15	16. 18	59. 39	59. 50	4797	4783		
21	W.	16. 20	16. 22	59. 58	60. 2	4773	4769		
22	Th.	16. 22	16. 22	60. 4	60. 4	4766	4766		
23	F.	16. 21	16. 20	60. 1	59. 55	4770	4777		
24	Sa.	16. 18	16. 15	59. 48	59. 38	4786	4798		
25	Su.	16. 12	16. 8	59. 27	59. 14	4811	4827		
26	M.	16. 5	16. 1	59. 1	58. 48	4843	4859		
27	Tu.	15. 58	15. 54	58. 34	58. 20	4876	4893		
28	W.	15. 50	15. 46	58. 5	57. 50	4912	4931		
29	Th.	15. 41	15. 37	57. 35	57. 20	4950	4968		
30	F.	15. 33	15. 29	57. 5	56. 50	4987	5006		
31	Sa.	15. 25	15. 21	56. 35	56. 20	5026	5045		

Distances of γ 's Center from Sun, and from Stars east of her.

Days.	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.
1		72.	5. 58	70.	23. 5	68.	40. 22	66.	57. 50	65.	15. 28	63.	33. 17	61.	51. 18	60.	9. 31
2		58.	27. 55	56.	46. 31	55.	5. 20	53.	24. 22	51.	43. 37	50.	3. 5	48.	22. 46	46.	42. 42
3	Spica α	45.	2. 52	43.	23. 18	41.	43. 59	40.	4. 55	38.	26. 7	36.	47. 34	35.	9. 17	33.	31. 17
4		31.	53. 34	30.	16. 8	28.	39. 2	27.	2. 15	25.	25. 47	23.	49. 40	22.	13. 55	20.	38. 31
5		19.	3. 30														
6	Antares.	64.	32. 6	62.	56. 19	61.	20. 48	59.	45. 32	58.	10. 31	56.	35. 45	55.	1. 15	53.	26. 59
7		51.	52. 59	50.	19. 15	48.	45. 45	47.	12. 30	45.	39. 30	44.	6. 44	42.	34. 11	41.	1. 53
8		39.	29. 48	37.	57. 57	36.	26. 19	34.	54. 54	33.	23. 43						
9	α Aquilæ.	83.	1. 14	81.	41. 23	80.	21. 46	79.	2. 23	77.	43. 14	76.	24. 19	75.	5. 38	73.	47. 13
10		72.	29. 4	71.	11. 11	69.	53. 35	68.	36. 16	67.	19. 14	66.	2. 30	64.	45. 6	63.	30. 1
11		62.	14. 15							88.	22. 39	87.	2. 0	85.	41. 33	84.	21. 17
12	Fomal- haut.	86.	38. 57	85.	18. 30	83.	58. 6	82.	37. 44	81.	17. 26	79.	57. 11	78.	37. 0	77.	16. 53
13		75.	56. 50	74.	36. 51	73.	16. 57	71.	57. 8	70.	37. 23						
14																	
15		117.	26. 48	116.	5. 20	114.	43. 56	113.	22. 37	112.	1. 24	110.	40. 14	109.	19. 7	107.	58. 3
16	The Sun.	106.	37. 2	105.	16. 4	103.	55. 6	102.	34. 9	101.	13. 12	99.	52. 14	98.	31. 15	97.	10. 14
17		95.	49. 12	94.	28. 8	93.	7. 0	91.	45. 49	90.	24. 33	89.	3. 12	87.	41. 44	86.	20. 10

X. MARCH 1787. [33]

Days	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.
12		84.	58. 29	83.	36. 42	82.	14. 46	80.	52. 41	79.	30. 28	78.	8. 5	76.	45. 31	75.	22. 46
13		73.	59. 51	72.	36. 44	71.	13. 24	69.	49. 51	68.	26. 7	67.	2. 7	65.	37. 52	64.	13. 22
14	The Sun.	62.	48. 38	61.	23. 38	59.	58. 21	58.	32. 48	57.	6. 58	55.	40. 51	54.	14. 27	52.	47. 45
15		51.	20. 46	49.	53. 28	48.	25. 51	46.	57. 56	45.	29. 42	44.	1. 10	42.	32. 19	41.	3. 9
16		39.	33. 40														
20	Aldebaran.	41.	57. 17	40.	11. 3	38.	24. 59	36.	39. 8	34.	53. 29	33.	7. 59	31.	22. 57	29.	38. 25
21		27.	54. 21	26.	11. 1	24.	28. 26	22.	46. 43	21.	5. 58						
22										62.	6. 9	60.	13. 30	58.	30. 59	56.	43. 34
23	Pollux.	54.	56. 17	53.	9. 9	51.	22. 12	47.	35. 26	47.	48. 52	46.	2. 30	44.	16. 23	42.	30. 32
24		40.	44. 57	38.	59. 38	37.	14. 42	35.	30. 9	33.	45. 58	32.	2. 14	30.	19. 0	28.	36. 18
25		26.	54. 6														
26		63.	3. 1	61.	17. 10	59.	31. 30	57.	46. 2	56.	0. 46	54.	15. 42	52.	30. 51	50.	46. 12
27	Regulus.	49.	1. 46	47.	17. 34	45.	33. 35	43.	49. 50	42.	6. 18	40.	22. 59	38.	39. 56	36.	57. 7
28		35.	14. 34	33.	32. 16	31.	50. 16	30.	8. 34	28.	27. 10	26.	46. 5	25.	5. 22	23.	25. 0
29		21.	44. 59														
30	Spica	75.	32. 27	73.	51. 4	72.	9. 52	70.	28. 52	68.	48. 4	67.	7. 28	65.	27. 3	63.	46. 50
31		62.	6. 49	60.	27. 0	58.	47. 23	57.	7. 59	55.	28. 46	53.	49. 45	52.	10. 56	50.	32. 19
A. 1		48.	53. 54	47.	15. 42	45.	37. 42	43.	59. 54	42.	22. 18	40.	44. 54	39.	7. 43	37.	30. 45
		35.	53. 59	34.	17. 27	32.	41. 8	31.	5. 3	29.	29. 12	27.	53. 36	26.	18. 13	24.	43. 6
		23.	8. 13														

Distances of β 's Center from Sun, and from Stars west of her.

Days.	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.
1	Pollux.	20.	26. 13	22.	2. 55	23.	40. 5	25.	17. 43	26.	55. 48	28.	34. 14	30.	12. 51	31.	51. 41
2		33.	30. 40	35.	9. 38	36.	48. 35	38.	27. 32	40.	6. 29	41.	45. 20	43.	24. 3	45.	2. 41
3		46.	41. 12	48.	19. 33	49.	57. 45	51.	35. 46	53.	13. 38	54.	51. 19	56.	28. 47	58.	6. 3
4		59.	43. 7														
4	Regulus.	22.	42. 48	24.	19. 14	25.	55. 32	27.	31. 44	29.	7. 49	30.	43. 45	32.	19. 30	33.	55. 5
5		35.	30. 29	37.	5. 38	38.	40. 34	40.	15. 18	41.	49. 49	43.	24. 8	44.	58. 13	46.	32. 5
6		48.	5. 44	49.	39. 7	51.	12. 17	52.	45. 13	54.	17. 56	55.	50. 26	57.	22. 44	58.	54. 48
7		60.	26. 40	61.	58. 19	63.	29. 45	65.	1. 0	66.	32. 3	68.	2. 55	69.	33. 36	71.	4. 7
8	Spica α	72.	34. 27														
8		18.	36. 40	20.	5. 59	21.	35. 16	23.	4. 30	24.	33. 41	26.	2. 49	27.	31. 54	29.	0. 55
9		30.	29. 53	31.	58. 45	33.	27. 32	34.	56. 17	36.	24. 59	37.	53. 37	39.	22. 14	40.	50. 48
10		42.	19. 20	43.	47. 51	45.	16. 21	46.	44. 52	48.	13. 22	49.	41. 54	51.	10. 28	52.	39. 3
11	Antares.	54.	7. 41	55.	36. 20	57.	5. 4	58.	33. 52	60.	2. 44	61.	31. 42	63.	0. 47	64.	30. 0
12		65.	59. 20														
12		20.	19. 58	21.	49. 15	23.	18. 43	24.	48. 21	26.	18. 10	27.	48. 10	29.	18. 22	30.	48. 46
13		32.	19. 22	33.	50. 11	35.	21. 12	36.	52. 29	38.	23. 58	39.	55. 42	41.	27. 42	42.	59. 58
14		44.	32. 30	46.	5. 19	47.	38. 26	49.	11. 50	50.	45. 31	52.	19. 30	53.	53. 48	55.	28. 25
15		57.	3. 21	58.	38. 37	60.	14. 13	61.	50. 10	63.	26. 27	65.	3. 5	66.	40. 5	68.	17. 25

XI. MARCH 1787. [35]

Stars Names.	Noon.	3 Hours.	6 Hours.	9 Hours.	12 Hours.	15 Hours.	18 Hours.	21 Hours.
Days.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
16 Antares.	69. 55. 7	71. 33. 10	73. 11. 35	74. 50. 21	76. 29. 29	78. 8. 59	79. 48. 51	81. 29. 5
17	83. 9. 40	84. 50. 37	86. 31. 55	88. 13. 35	89. 55. 36			
22	39. 3. 48	40. 44. 28	42. 25. 9	44. 5. 51	45. 46. 34	47. 27. 16	49. 7. 56	50. 48. 33
23	52. 29. 8	54. 9. 39	55. 50. 4	57. 30. 24	59. 10. 39	60. 50. 48	62. 30. 49	64. 10. 44
24	65. 50. 31	67. 30. 10	69. 9. 40	70. 49. 1	72. 28. 14	74. 7. 18	75. 46. 11	77. 24. 55
25	79. 3. 29	80. 41. 52	82. 20. 3	83. 58. 4	85. 35. 54	87. 13. 33	88. 51. 1	90. 28. 17
26	92. 5. 22	93. 42. 15	95. 18. 57	96. 55. 26	98. 31. 44	100. 7. 50	101. 43. 44	103. 19. 26
27	104. 54. 56	106. 30. 13	108. 5. 18	109. 40. 10	111. 14. 51	112. 49. 21	114. 23. 36	115. 57. 41
28	117. 31. 32	119. 5. 11	120. 38. 37					
26	31. 30. 27	33. 11. 22	34. 52. 21	36. 33. 26	38. 14. 35	39. 55. 46	41. 36. 57	43. 18. 6
27	44. 59. 15	46. 49. 17	48. 21. 14	50. 2. 6	51. 42. 52	53. 23. 32	55. 4. 4	56. 44. 28
28	58. 24. 45	60. 4. 52	61. 44. 50	63. 24. 38	65. 4. 18	66. 43. 49	68. 23. 10	70. 2. 21
29	71. 41. 23							
29	30. 0. 55	31. 37. 37	33. 14. 22	34. 51. 9	36. 28. 0	38. 4. 51	39. 41. 39	41. 18. 26
30	42. 55. 11	44. 31. 51	46. 8. 24	47. 44. 52	49. 21. 14	50. 57. 28	52. 33. 34	54. 9. 32
31	55. 45. 22	57. 21. 4	58. 56. 37	60. 32. 1	62. 7. 16	63. 42. 22	65. 17. 18	66. 52. 4
A.1	68. 26. 40							

Configurations of the SATELLITES of JUPITER
at Half an Hour past Seven o'Clock in the Evening.

1		4.	3.	2.	.1	○			
2	4.		.3	.2		○			1●
3			.3			○	.1	.1	
4	.4			1.		○	.1	.2	
5		.4	2.			○	.1	.3	
6			.4	.1	.2	○		.3	
7				.4		○	1 6 3 2.		
8	2●		3.	.1		○	.4		
9	1●		3.	.2		○		.4	
10			.3			○	.1	.2	.4
11				1.		○	.3	.2	.4
12			2.			○	.1	.3	
13				1.	.2	○		.3	.4
14						○	1. 3.	.2	.4
15	2●		3.	.1		○	.4		
16			.2	.4		○	1.		
17	1.0		.4.	.3		○	.2		
18		4.			1.	○	.2		3.0
19	4.			2.		○	.1	.3	
20	.4			1.	.2	○		.3	
21	.4					○	1. 3.	.2	
22		.4		.1		○	2.		
23			3.	.4. 2		○	1.		
24	4.0		.3		.1	○	.2		
25	1●				.3	○		.2. 4	
26				2.		○	.1	.3	.4
27			.2	1		○		.3	.4
28						○	.1	.2	.3
29	3●			.1		○	2.		.4
30			.3	2.		○	1.		.4
31			.3		.1	○	.2		.4

I. APRIL 1787. [37]			Phases of the Moon.	
Days of the Month.	Days of the Week.	Sundays, Holidays, &c.	D. H. M.	
1	Su.	6th Sunday in Lent. Palm	Full Moon ---	2. 4. 23
2	M.	[Sunday.	Last Quarter ---	10. 8. 3
3	Tu.	Rich. Bp. of Chichester.	New Moon ---	17. 12. 42
4	W.	S. Ambrose.	First Quarter --	24. 3. 58
5	Th.		Other Phenomena.	
6	F.	Good Friday.	D. H. M.	
7	Sa.		4.	♂ Stationary.
8	Su.	Easter-Day.	6.11. 3	♂ d.Lat. 54'.
9	M.	Easter-Monday.	7.	♂ d.Lat. 53'.
10	Tu.	Easter-Tuesday.	14.41	♂ Ophiuchi.
11	W.		16.35	♂ Ophiuchi.
12	Th.		9.14.28	♂ ♀
13	F.		12.	♀ d.Lat. 1'.
14	Sa.		13.11. 1	♂
15	Su.	1st. Su. after East. Low	14.	♂ d.Lat. 15'.
16	M.	[Sun.	17.	♀ d.Lat. 18'.
17	Tu.		19.11.29	♂ Pleiadum.
18	W.	Ox. and Cam. T. begin.	16.56	♂ enters ♄
19	Th.	Alphege.	21. 4.48	♂ 125 ♄
20	F.		8.12	♂ 132 ♄
21	Sa.		21. 8	♂ μ II
22	Su.	2d Sunday after Easter.	22.19.26	♂ II
23	M.	St. George. From East.	25.	♀ d.Lat. 8'.
24	Tu.	[in 15 days, 1 ret.	5.28	♂ Ω
25	W.	St. Mark. Pri. Mary born.	10.10	♂ Ω
26	Th.	[East, Ter. begins.	19.21	♂ Ω
27	F.		27.17.50	♂ e Ω
28	Sa.		28.	♂ Stationary.
29	Su.	3d Sun. after Easter.		
30	M.	From East. in 3 weeks, [2 ret.		

Days of the Month.	Days of the Week.	Sun's Longitude.	Sun's Right Asc. in Time.	Sun's Declin. North.	Equat. of Time. Add.	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M. S.	S.
1	Su.	0. 11. 40. 50	0. 42. 57, 1	4. 37. 28	3. 55, 4	18, 4
2	M.	0. 12. 39. 51	0. 46. 35, 2	5. 0. 31	3. 37, 0	18, 2
3	Tu.	0. 13. 38. 51	0. 50. 13, 5	5. 23. 30	3. 18, 8	18, 0
4	W.	0. 14. 37. 49	0. 53. 51, 9	5. 46. 23	3. 0, 8	17, 9
5	Th.	0. 15. 36. 45	0. 57. 30, 5	6. 9. 9	2. 42, 9	17, 8
6	F.	0. 16. 35. 38	1. 1. 9, 2	6. 31. 49	2. 25, 1	17, 6
7	Sa.	0. 17. 34. 30	1. 4. 48, 2	6. 54. 23	2. 7, 5	17, 3
8	Su.	0. 18. 33. 20	1. 8. 27, 4	7. 16. 50	1. 50, 2	17, 1
9	M.	0. 19. 32. 9	1. 12. 6, 9	7. 39. 10	1. 33, 1	16, 7
10	Tu.	0. 20. 30. 56	1. 15. 46, 7	8. 1. 22	1. 16, 4	16, 4
11	W.	0. 21. 29. 42	1. 19. 26, 7	8. 23. 26	1. 0, 0	16, 1
12	Th.	0. 22. 28. 26	1. 23. 7, 1	8. 45. 22	0. 43, 9	15, 8
13	F.	0. 23. 27. 8	1. 26. 47, 9	9. 7. 9	0. 28, 1	15, 4
14	Sa.	0. 24. 25. 48	1. 30. 29, 0	9. 28. 48	0. 12, 7	15, 1
15	Su.	0. 25. 24. 27	1. 34. 10, 4	9. 50. 17	Sub. 2, 4	14, 8
16	M.	0. 26. 23. 4	1. 37. 52. 1	10. 11. 36	0. 17, 2	14, 4
17	Tu.	0. 27. 21. 39	1. 41. 34. 2	10. 32. 45	0. 31, 6	14, 0
18	W.	0. 28. 20. 12	1. 45. 16. 8	10. 53. 44	0. 45, 6	13, 5
19	Th.	0. 29. 18. 44	1. 48. 59. 8	11. 14. 33	0. 59, 1	13, 1
20	F.	1. 0. 17. 14	1. 52. 43. 2	11. 35. 10	1. 12, 2	12, 7
21	Sa.	1. 1. 15. 41	1. 56. 27, 0	11. 55. 36	1. 24, 9	12, 3
22	Su.	1. 2. 14. 6	2. 0. 11, 2	12. 15. 50	1. 37, 2	11, 9
23	M.	1. 3. 12. 29	2. 3. 55, 8	12. 35. 52	1. 49, 1	11, 5
24	Tu.	1. 4. 10. 50	2. 7. 40, 9	12. 55. 41	2. 0, 6	11, 0
25	W.	1. 5. 9. 9	2. 11. 26, 4	13. 15. 17	2. 11, 6	10, 5
26	Th.	1. 6. 7. 25	2. 15. 12, 4	13. 34. 39	2. 22, 1	10, 1
27	F.	1. 7. 5. 39	2. 18. 58, 9	13. 53. 51	2. 32, 2	9, 6
28	Sa.	1. 8. 3. 51	2. 22. 45, 8	14. 12. 47	2. 41, 8	9, 1
29	Su.	1. 9. 2. 2	2. 26. 33, 2	14. 31. 29	2. 50, 9	8, 6
30	M.	1. 10. 0. 11	2. 30. 21, 2	14. 49. 57	2. 59, 5	

III. APRIL 1787. [39]

Days.	Semidia- meter of the Sun.	Time of D ^o passing the Meridian.	Hourly Motion of the Sun.	Logarithm of the Sun's Distance.	Place of the Moon's Node.
	M. S.	M. S.	M. S.		S. D. M.
1	16. 2, 4	1. 4, 4	2. 27, 6	0. 000165	9. 9. 53
7	16. 0, 7	1. 4, 5	2. 27, 2	0. 000921	9. 9. 34
13	15. 59, 1	1. 4, 7	2. 26, 6	0. 001676	9. 9. 14
19	15. 57, 6	1. 5, 1	2. 26, 1	0. 002396	9. 8. 55
25	15. 56, 1	1. 5, 5	2. 25, 6	0. 003068	9. 8. 36

ECLIPSES of the SATELLITES of JUPITER.

I. Satellite. Emerfions.		II. Satellite. Emerfions.		III. Satellite.	
Days	H. M. S.	Days	H. M. S.	Days	H. M. S.
1	10. 49. 33	2	5. 2. 45	5	9. 53. 55 I.
3	5. 19. 0	5	18. 21. 37	5	11. 49. 7 E.
4	23. 48. 25	*9	7. 40. 25	12	13. 56. 56 I.
6	18. 17. 49	12	20. 59. 9	12	15. 53. 15 E.
8	12. 47. 13	16	10. 17. 46	19	17. 59. 36 I.
10	7. 16. 36	19	23. 36. 16	19	19. 57. 0 E.
12	1. 45. 59	23	12. 54. 40	IV. Satellite. Conj.	
13	20. 15. 21			1	20. 49 Sup.
15	14. 44. 40			10	5. 47 Inf.
17	9. 13. 58			18	17. 30 Sup.
19	3. 43. 14				
20	22. 12. 29				
22	16. 41. 42				
24	11. 10. 53				

Days.	Heliocen- tric Lon- gitude.	Heliocen- tric Lati- tude.	Geocen- tric Lon- gitude.	Geocen- tric La- titude.	Declina- tion.	Passage over Merid.
	S. D. M.	D. M.	S. D. M.	D. M.	D. M.	H. M.

MERCURY. Inf. δ 14^d. 92^h.

1	5. 2. 20	6. 43 N	0. 28. 47	3. 8 N	13. 58 N	0. 59
4	5. 15. 59	6. 4	0. 29. 22	3. 13	14. 16	0. 50
7	5. 28. 23	5. 10	0. 28. 56	3. 6	14. 0	0. 38
10	6. 9. 44	4. 8	0. 27. 40	2. 45	13. 13	0. 23
13	6. 20. 12	3. 2	0. 25. 47	2. 11	12. 1	0. 5
16	6. 29. 58	1. 55	0. 23. 40	1. 28	10. 33	23. 42
19	7. 9. 12	0. 49 N	0. 21. 37	0. 38 N	9. 2	23. 25
22	7. 18. 0	0. 16 S	0. 19. 59	0. 13 S	7. 38	23. 10
25	7. 26. 32	1. 18	0. 18. 57	1. 0	6. 30	22. 57
28	8. 4. 52	2. 18	0. 18. 36	1. 42	5. 44	22. 46
30	8. 10. 23	2. 55	0. 18. 47	2. 5	5. 26	22. 39

V E N U S.

1	8. 4. 35	0. 36 N	10. 25. 52	0. 32 N	12. 24 S	21. 8
7	8. 14. 7	0. 2 N	11. 2. 23	0. 2 N	10. 36	21. 12
13	8. 23. 38	0. 31 S	11. 8. 59	0. 25 S	8. 36	21. 16
19	9. 3. 7	1. 4	11. 15. 41	0. 49	6. 25	21. 19
25	9. 12. 37	1. 35	11. 22. 27	1. 10	4. 5	21. 22

M A R S.

1	10. 7. 50	1. 49 S	11. 3. 57	1. 15 S	11. 14 S	21. 41
7	10. 11. 36	1. 50	11. 8. 36	1. 16	9. 32	21. 37
13	10. 15. 23	1. 51	11. 13. 15	1. 17	7. 47	21. 33
19	10. 19. 10	1. 51	11. 17. 54	1. 18	5. 59	21. 28
25	10. 22. 58	1. 51	11. 22. 31	1. 19	4. 10	21. 22

J U P I T E R.

1	1. 29. 10	0. 51 S	1. 21. 48	0. 44 S	17. 31 N	2. 35
7	1. 29. 42	0. 50	1. 23. 3	0. 43	17. 51	2. 18
13	2. 0. 14	0. 49	1. 24. 21	0. 42	18. 12	2. 2
19	2. 0. 46	0. 49	1. 25. 40	0. 42	18. 31	1. 45
25	2. 1. 18	0. 48	1. 27. 1	0. 41	18. 51	1. 28

S A T U R N.

1	10. 21. 13	1. 14 S	10. 25. 25	1. 9 S	14. 9 S	21. 6
7	10. 21. 24	1. 14	10. 25. 58	1. 10	13. 59	20. 47
13	10. 21. 35	1. 15	10. 26. 29	1. 11	13. 49	20. 27
19	10. 21. 46	1. 15	10. 26. 57	1. 12	13. 40	20. 7
25	10. 21. 58	1. 15	10. 27. 23	1. 13	13. 32	19. 46

V. APRIL 1787. [41]					
Days of the Month.	Days of the Week.	Moon's Longitude at Noon.	Moon's Longitude at Midnight.	Moon's Latitude at Noon.	Moon's Latitude at Midn.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
1	Su.	5. 27. 52. 50	6. 4. 14. 37	4. 53. 41 S	4. 58. 37 S
2	M.	6. 10. 33. 28	6. 16. 49. 18	4. 59. 50	4. 57. 24
3	Tu.	6. 23. 2. 10	6. 29. 12. 3	4. 51. 25	4. 42. 4
4	W.	7. 5. 19. 4	7. 11. 23. 20	4. 29. 30	4. 13. 57
5	Th.	7. 17. 25. 2	7. 23. 24. 26	3. 55. 38	3. 34. 46
6	F.	7. 29. 21. 51	8. 5. 17. 39	3. 11. 39	2. 46. 29
7	Sa.	8. 11. 12. 19	8. 17. 6. 17	2. 19. 35	1. 51. 12
8	Su.	8. 23. 0. 12	8. 28. 54. 34	1. 21. 35	0. 51. 2 S
9	M.	9. 4. 50. 4	9. 10. 47. 22	0. 19. 48 S	0. 11. 50 N
10	Tu.	9. 16. 47. 5	9. 22. 49. 59	0. 43. 34 N	1. 15. 5
11	W.	9. 28. 56. 42	10. 5. 7. 55	1. 46. 4	2. 16. 11
12	Th.	10. 11. 24. 15	10. 17. 46. 17	2. 45. 3	3. 12. 18
13	F.	10. 24. 14. 33	11. 0. 49. 25	3. 37. 30	4. 0. 15
14	Sa.	11. 7. 31. 14	11. 14. 20. 6	4. 20. 8	4. 36. 36
15	Su.	11. 21. 16. 0	11. 28. 18. 44	4. 49. 20	4. 57. 53
16	M.	0. 5. 27. 52	0. 12. 42. 49	5. 2. 0	5. 1. 17
17	Tu.	0. 20. 2. 44	0. 27. 26. 45	4. 55. 38	4. 45. 0
18	W.	1. 4. 53. 41	1. 12. 22. 22	4. 29. 27	4. 9. 13
19	Th.	1. 19. 51. 37	1. 27. 20. 20	3. 44. 38	3. 16. 11
20	F.	2. 4. 47. 23	2. 12. 11. 53	2. 44. 27	2. 10. 3
21	Sa.	2. 19. 33. 0	2. 26. 50. 9	1. 33. 42	0. 56. 5 N
22	Su.	3. 4. 2. 51	3. 11. 10. 51	0. 17. 54 N	0. 20. 9 S
23	M.	3. 18. 13. 58	3. 25. 12. 11	0. 57. 30 S	1. 33. 34
24	Tu.	4. 2. 5. 33	4. 8. 54. 11	2. 7. 49	2. 39. 51
25	W.	4. 15. 38. 17	4. 22. 18. 4	3. 9. 19	3. 35. 50
26	Th.	4. 28. 53. 43	5. 5. 25. 32	3. 59. 12	4. 19. 10
27	F.	5. 11. 53. 42	5. 18. 18. 28	4. 35. 36	4. 48. 25
28	Sa.	5. 24. 40. 2	6. 0. 58. 38	4. 57. 30	5. 2. 53
29	Su.	6. 7. 14. 21	6. 13. 27. 25	5. 4. 35	5. 2. 38
30	M.	6. 19. 37. 56	6. 25. 46. 2	4. 57. 9	4. 48. 17

[42]		A P R I L 1787.					VI.
Days of the Month.	Days of the Week.	D's Age.	D's Passage over Merid.	D's Right Ascens. at Noon.	D's Right Ascens. at Midn.	D's Declination at Noon.	D's Declination at Midn.
			H. M.	D. M.	D. M.	D. M.	D. M.
1	Sa.	14	11. 21	176. 6	181. 54	3. 29 S	6. 15 S
2	M.	15	12. 6	187. 43	193. 34	8. 47	11. 11
3	Tu.	16	12. 51	199. 27	205. 25	13. 28	15. 35
4	W.	17	13. 38	211. 27	217. 34	17. 32	19. 17
5	Th.	18	14. 26	223. 46	230. 3	20. 49	22. 7
6	F.	19	15. 14	236. 24	242. 49	23. 9	23. 56
7	Sa.	20	16. 4	249. 17	255. 47	24. 27	24. 41
8	Su.	21	16. 54	262. 18	268. 48	24. 38	24. 19
9	M.	22	17. 44	275. 17	281. 43	23. 42	22. 50
10	Tu.	23	18. 33	288. 6	294. 26	21. 41	20. 18
11	W.	24	19. 20	300. 42	306. 55	18. 40	16. 48
12	Th.	25	20. 7	313. 5	319. 13	14. 44	12. 28
13	F.	26	20. 54	325. 20	331. 27	10. 2	7. 27
14	Sa.	27	21. 41	337. 36	343. 48	4. 44 S	1. 55 S
15	Su.	28	22. 31	350. 5	356. 28	0. 58 N	3. 53 N
16	M.	29	23. 23	3. 0	9. 42	6. 47	9. 39
17	Tu.	1	6	16. 36	23. 42	12. 24	15. 0
18	W.	2	0. 19	31. 2	38. 34	17. 24	19. 31
19	Th.	3	1. 19	46. 19	54. 15	21. 19	22. 46
20	F.	4	2. 22	62. 17	70. 23	23. 49	24. 26
21	Sa.	5	3. 26	78. 30	86. 32	24. 37	24. 22
22	Su.	6	4. 28	94. 25	102. 8	23. 42	22. 40
23	M.	7	5. 26	109. 37	116. 51	21. 16	19. 35
24	Tu.	8	6. 21	123. 51	130. 37	17. 38	15. 29
25	W.	9	7. 11	137. 9	143. 29	13. 9	10. 42
26	Th.	10	7. 58	149. 38	155. 39	8. 8	5. 31
27	F.	11	8. 43	161. 33	167. 22	2. 52 N	0. 12 N
28	Sa.	12	9. 27	173. 8	178. 53	2. 26 S	5. 1 S
29	Su.	13	10. 10	184. 37	190. 23	7. 32	9. 57
30	M.	14	10. 54	196. 12	202. 5	12. 16	14. 26

VII. A P R I L 1787. [43]

Days of the Month.	Days of the Week.	Semid ^r . D at Noon.	Semid ^r . D at Midnight.	Hor. Par. D at Noon.	Hor. Par. D at Midnight.	Proport. Lo- gar. at Noon.	Proport. Lo- gar. at Midd.
		M. S.	M. S.	M. S.	M. S.		
1	Su.	15. 17	15. 13	56. 6	55. 52	5063	5081
2	M.	15. 10	15. 6	55. 38	55. 25	5099	5116
3	Tu.	15. 3	15. 0	55. 13	55. 1	5132	5148
4	W.	14. 57	14. 54	54. 50	54. 40	5162	5175
5	Th.	14. 52	14. 50	54. 32	54. 25	5186	5195
6	F.	14. 49	14. 48	54. 20	54. 17	5202	5206
7	Sa.	14. 47	14. 48	54. 16	54. 17	5207	5206
8	Su.	14. 49	14. 50	54. 20	54. 25	5202	5195
9	M.	14. 52	14. 55	54. 33	54. 44	5185	5170
10	Tu.	14. 58	15. 2	54. 57	55. 12	5153	5133
11	W.	15. 7	15. 13	55. 30	55. 51	5110	5082
12	Th.	15. 19	15. 26	56. 13	56. 37	5054	5023
13	F.	15. 33	15. 40	57. 3	57. 29	4990	4957
14	Sa.	15. 47	15. 55	57. 56	58. 23	4923	4890
15	Su.	16. 2	16. 9	58. 50	59. 16	4856	4824
16	M.	16. 15	16. 21	59. 39	60. 0	4797	4771
17	Tu.	16. 26	16. 30	60. 19	60. 34	4748	4730
18	W.	16. 33	16. 35	60. 45	60. 52	4717	4709
19	Th.	16. 36	16. 35	60. 55	60. 53	4705	4708
20	F.	16. 34	16. 32	60. 48	60. 39	4714	4724
21	Sa.	16. 28	16. 24	60. 27	60. 12	4739	4757
22	Su.	16. 20	16. 14	59. 55	59. 36	4777	4800
23	M.	16. 9	16. 3	59. 16	58. 55	4824	4850
24	Tu.	15. 57	15. 51	58. 33	58. 12	4877	4903
25	W.	15. 46	15. 40	57. 51	57. 30	4930	4956
26	Th.	15. 35	15. 29	57. 10	56. 51	4981	5005
27	F.	15. 25	15. 20	56. 33	56. 16	5028	5050
28	Sa.	15. 16	15. 12	56. 0	55. 45	5071	5090
29	Su.	15. 8	15. 4	55. 31	55. 18	5108	5125
30	M.	15. 1	14. 58	55. 6	54. 55	5141	5155

Distances of γ 's Center from Sun, and from Stars east of her.

Days.	Stars Names.	Noon.	3 Hours.	6 Hours.	9 Hours.	12 Hours.	15 Hours.	18 Hours.	21 Hours.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
1		68. 39. 24	67. 4. 5	65. 28. 56	63. 53. 59	62. 19. 13	60. 44. 38	59. 10. 15	57. 36. 3
2	Antares.	56. 2. 3	54. 28. 15	52. 54. 38	51. 21. 12	49. 47. 58	48. 14. 54	46. 42. 0	45. 9. 18
3		43. 36. 46	42. 4. 26	40. 32. 17	39. 0. 19	37. 28. 31	35. 56. 53	34. 25. 25	32. 54. 10
4		31. 23. 4							
4		86. 31. 4	85. 10. 18	83. 49. 43	82. 29. 20	81. 9. 9	79. 49. 10	78. 29. 25	77. 9. 53
5	α Aquilæ.	75. 50. 35	74. 31. 30	73. 12. 42	71. 54. 9	70. 35. 54	69. 17. 53	68. 0. 12	66. 42. 51
6		65. 25. 49	64. 9. 7	62. 52. 48	61. 36. 51	60. 21. 16			
6									
7	Fomalhaut.	79. 31. 1	78. 10. 58	76. 51. 2	75. 31. 13	74. 11. 31	72. 51. 55	71. 32. 27	70. 13. 8
8		68. 53. 56	67. 34. 53	66. 16. 0	64. 57. 17	63. 38. 45	62. 20. 24	61. 2. 16	59. 44. 21
9		58. 26. 38							
9	α Pegasi.	76. 37. 56	75. 11. 32	73. 45. 4	72. 18. 30	70. 51. 51	69. 25. 7	67. 58. 17	66. 31. 22
10		65. 4. 21	63. 37. 14	62. 10. 1	60. 42. 12	59. 15. 16			
7									
8		115. 32. 40	114. 11. 36	112. 50. 29	111. 29. 17	120. 56. 34	119. 35. 38	118. 14. 40	116. 53. 41
9	The Sun.	104. 42. 4	103. 20. 18	101. 58. 23	100. 36. 21	110. 8. 2	108. 46. 42	107. 25. 15	106. 3. 43
10		93. 43. 49	92. 20. 46	90. 57. 30	89. 34. 2	99. 14. 10	97. 51. 51	96. 29. 20	95. 6. 40
11		82. 33. 13	81. 8. 17	79. 43. 4	78. 17. 34	88. 10. 21	86. 46. 26	85. 22. 17	83. 57. 52
12		78. 5. 33	69. 38. 11	68. 10. 28	66. 42. 24	76. 51. 47	75. 25. 42	73. 59. 18	72. 32. 35
						65. 13. 59	63. 48. 13	62. 16. 4	60. 46. 34

Days.	Stars Names.	Noon.	3 Hours.	6 Hours.	9 Hours.	12 Hours.	15 Hours.	18 Hours.	21 Hours.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
13	The Sun.	59. 16. 41	57. 46. 26	56. 15. 47	54. 44. 45	53. 13. 20	51. 41. 31	50. 9. 19	48. 36. 44
14		47. 3. 45	45. 30. 23	43. 56. 38	42. 22. 30	40. 47. 59			
19	Pollux.	60. 13. 15	58. 22. 24	56. 31. 38	54. 40. 59	52. 50. 24	51. 0. 1	49. 9. 49	47. 19. 50
20		45. 30. 4	43. 40. 31	41. 51. 18	40. 2. 26	38. 13. 54	36. 25. 47	34. 38. 10	32. 51. 2
21		31. 4. 24							
21		67. 19. 43	65. 30. 3	63. 40. 38	61. 51. 30	60. 2. 38	58. 14. 3	56. 25. 45	54. 37. 46
22	Regulus.	52. 50. 4	51. 2. 40	49. 15. 37	47. 28. 53	45. 42. 29	43. 56. 27	42. 10. 46	40. 25. 27
23		38. 40. 29	36. 55. 53	35. 11. 41	33. 27. 53	31. 44. 28	30. 1. 26	28. 18. 53	26. 36. 49
24		24. 55. 14	23. 14. 11	21. 33. 44	19. 53. 52	18. 14. 34			
24						71. 54. 55	70. 13. 27	68. 32. 17	66. 51. 26
25		65. 10. 52	63. 30. 36	61. 50. 38	60. 10. 57	58. 31. 34	56. 52. 28	55. 13. 39	53. 35. 7
26	Spica ♀	51. 56. 51	50. 18. 51	48. 41. 7	47. 3. 39	45. 26. 27	43. 49. 31	42. 12. 50	40. 36. 24
27		39. 0. 14	37. 24. 18	35. 48. 37	34. 13. 11	32. 38. 0	31. 3. 3	29. 28. 21	27. 53. 54
28		26. 19. 43	24. 45. 48	23. 12. 10	21. 38. 48	20. 5. 42			
28						65. 34. 13	64. 0. 28	62. 26. 54	60. 53. 29
29	Antares.	59. 20. 15	57. 47. 11	56. 14. 17	54. 41. 31	53. 8. 57	51. 36. 32	50. 4. 16	48. 32. 9
30		47. 0. 11	45. 28. 22	43. 56. 41	42. 25. 9	40. 53. 46	39. 22. 31	37. 51. 24	36. 20. 25
MI		34. 49. 35							

XI.

APRIL 1787.

47

Days.	Stars Names.	Noon.	3 Hours.	6 Hours.	9 Hours.	12 Hours.	15 Hours.	18 Hours.	21 Hours.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
20		48. 18. 27	50. 0. 34	51. 42. 27	39. 45. 17	41. 28. 13	43. 11. 1	44. 53. 40	46. 36. 8
21		61. 48. 47	63. 28. 55	65. 8. 45	53. 24. 8	55. 5. 35	56. 46. 46	58. 27. 42	60. 8. 22
22		75. 1. 36	76. 39. 21	78. 16. 47	66. 48. 19	68. 27. 35	70. 6. 33	71. 45. 12	73. 23. 33
23	The Sun.	87. 54. 48	89. 30. 3	91. 4. 58	79. 53. 54	81. 30. 43	83. 7. 12	84. 43. 23	86. 19. 15
24		100. 28. 10	102. 1. 0	103. 33. 32	92. 39. 36	94. 13. 55	95. 47. 56	97. 21. 38	98. 55. 3
25		112. 42. 49	114. 13. 25	115. 43. 45	105. 5. 47	106. 37. 45	108. 9. 26	109. 40. 50	111. 11. 58
26		55. 14. 9	56. 55. 31	58. 36. 38	117. 13. 49	118. 43. 38	120. 13. 12		
27	Aldebaran.	68. 37. 55	70. 17. 13	71. 56. 15	60. 17. 30	61. 58. 6	63. 38. 27	65. 18. 32	66. 58. 21
28		39. 59. 0	41. 35. 4	43. 11. 0	73. 35. 1	33. 33. 49	35. 10. 15	36. 46. 35	38. 22. 50
29	Pollux.	52. 43. 38	54. 18. 31	55. 53. 14	44. 46. 48	46. 22. 29	47. 58. 0	49. 33. 22	51. 8. 35
30		28. 16. 36	29. 50. 1	31. 23. 21	57. 27. 46	59. 2. 8	23. 36. 3	25. 9. 36	26. 43. 7
31	Regulus.	40. 41. 6	42. 13. 38	43. 46. 2	32. 56. 36	34. 29. 45	36. 2. 46	37. 35. 40	39. 8. 26
		52. 57. 48	54. 29. 18	56. 0. 42	45. 18. 19	46. 50. 28	48. 22. 29	49. 54. 23	52. 26. 9
		65. 6. 32			57. 31. 57	59. 3. 6	60. 34. 8	62. 5. 2	63. 35. 51

Configurations of the SATELLITES of JUPITER
at Eight o' Clock in the Evening.

1	10			.3	⊙	4.	2.	
2			204		⊙	.1	.3	
3				.2	⊙			.3
4	4.			1.	⊙	.1.2	3.	
5	4.			1.	⊙	2.		30
6	4.			3. 2.	⊙	1.		
7	4.			.3	⊙	.1.2		
8				.3	⊙	1.	2.	
9	10			.4	⊙		.3	
10				.2	⊙	.4		.3
11					⊙	.1.2	.4	.3
12				1.	⊙	3. 2.		.4
13				3. 2.	⊙	1.		.4
14				.3	⊙	.1.2		.4
15				.3	⊙	1.	.2	
16	20			.1	⊙	.3		4.
17	10			.2	⊙		.4.3	
18					⊙	.1.2	4.	3.
19				4. 1.	⊙	3. 2.		
20				4. 3. 2.	⊙	.1		
21	4.			102	⊙			
22	4.			.3	⊙	1.	.2	
23	4.			.1	⊙			3.0
24	4.			.2	⊙	1.	.3	
25				.4	⊙	102		3.

M A Y 1787.			[49]
Days of the Month.	Days of the Week.	Sundays, Holidays, &c.	Phases of the Moon.
			D. H. M.
1	Tu.	St. Philip and St. James.	Full Moon --- 1. 19. 38
2	W.		Last Quarter -- 9. 23. 46
3	Th.	Invention of the Crofs.	New Moon -- 16. 20. 43
4	F.		First Quarter -- 23. 12. 50
5	Sa.		Full Moon --- 31. 11. 16
		[ante P.L.]	Other Phenomena.
6	Su.	4th Su. after East. J. Ev.	D. H. M.
7	M.	From Easter in 1 month,	3. 18. 0 ☾ σ ♀
8	Tu.	[3 ret.]	4. 21. 37 ☾ θ Ophiuchi.
9	W.		23. 31 ☾ β Ophiuchi.
10	Th.		6. 21. 33 ☾ ο ♀
11	F.		7. 0. 6 ☾ π ♀
12	Sa.		14. 16. 48 ☾ η ♂
			18. 14. 11 ☾ ι 25 ♂
13	Su.	5th Su. aft. East. Rog. Su.	17. 29 ☾ ι 32 ♂
14	M.	From East. in 5 w. 4 ret.	19. 6. 0 ☾ μ ♀
15	Tu.		20. 3. 33 ☾ ρ ♀
16	W.		17. 27 ☾ enters ♀
17	Th.	Ascension-day. H Thurs.	22. 11. 53 ☾ ε ♂
18	F.	On mor. of Asc. 5 ret.	16. 30 ☾ ο ♂
19	Sa.	2. Ch. born. 1744. Dumst.	23. 1. 29 ☾ π ♂
			24. 23. 27 ☾ ε ♂
20	Su.	Sunday after Ascen. Day.	30. 13. 34 ☾ δ ♀
21	M.	Easter Term ends.	31. 0. 10 ☾ σ ♀
22	Tu.	Prs. Eliz. born. 1770.	
23	W.		
24	Th.	Oxford Term ends.	
25	F.		
26	Sa.	Augustin 1st Abp. Cant.	
27	Su.	Whit-Sunday. Cam T.	
28	M.	[div. m. Ven. Bed.]	
29	Tu.	K. Char. II. restored.	
30	W.		
31	Th.		

[50]		M A Y 1787.				II.	
Days of the Month.	Days of the Week.	Sun's Longitude.	Sun's Right Asc. in Time.	Sun's Declin. North.	Equat. of Time. Sub.	Diff.	
		S. D. M. S.	H. M. S.	D. M. S.	M. S.	S.	
1	Tu.	1. 10. 58. 18	2. 34. 9. 8	15. 8. 9	3. 7. 5		
2	W.	1. 11. 56. 23	2. 37. 58. 8	15. 26. 8	3. 15. 0	7. 5	
3	Th.	1. 12. 54. 26	2. 41. 48. 4	15. 43. 52	3. 21. 9	6. 9	
4	F.	1. 13. 52. 28	2. 45. 38. 5	16. 1. 19	3. 28. 3	6. 4	
5	Sa.	1. 14. 50. 28	2. 49. 29. 2	16. 18. 31	3. 34. 1	5. 8	
						5. 3	
6	Su.	1. 15. 48. 27	2. 53. 20. 5	16. 35. 25	3. 39. 4		
7	M.	1. 16. 46. 25	2. 57. 12. 3	16. 52. 5	3. 44. 1	4. 7	
8	Tu.	1. 17. 44. 21	3. 1. 4. 8	17. 8. 27	3. 48. 2	4. 1	
9	W.	1. 18. 42. 16	3. 4. 57. 9	17. 24. 34	3. 51. 7	3. 5	
10	Th.	1. 19. 40. 10	3. 8. 51. 6	17. 40. 22	3. 54. 6	2. 9	
						2. 2	
11	F.	1. 20. 38. 3	3. 12. 45. 9	17. 55. 52	3. 56. 8		
12	Sa.	1. 21. 35. 55	3. 16. 40. 8	18. 11. 5	3. 58. 4	1. 6	
13	Su.	1. 22. 33. 45	3. 20. 36. 2	18. 25. 59	3. 59. 5	1. 1	
14	M.	1. 23. 31. 34	3. 24. 32. 2	18. 40. 35	4. 0. 0	0. 5	
15	Tu.	1. 24. 29. 22	3. 28. 28. 8	18. 54. 54	3. 59. 9	0. 1	
						0. 7	
16	W.	1. 25. 27. 9	3. 32. 26. 1	19. 8. 52	3. 59. 2		
17	Th.	1. 26. 24. 55	3. 36. 24. 0	19. 22. 31	3. 57. 9	1. 3	
18	F.	1. 27. 22. 39	3. 40. 22. 4	19. 35. 50	3. 56. 1	1. 8	
19	Sa.	1. 28. 20. 22	3. 44. 21. 3	19. 48. 49	3. 53. 7	2. 4	
20	Su.	1. 29. 18. 4	3. 48. 20. 8	20. 1. 28	3. 50. 8	2. 9	
						3. 4	
21	M.	2. 0. 15. 44	3. 52. 20. 8	20. 13. 47	3. 47. 4		
22	Tu.	2. 1. 13. 22	3. 56. 21. 3	20. 25. 45	3. 43. 5	3. 9	
23	W.	2. 2. 10. 59	4. 0. 22. 3	20. 37. 22	3. 39. 0	4. 5	
24	Th.	2. 3. 8. 34	4. 4. 23. 8	20. 48. 37	3. 34. 1	4. 9	
25	F.	2. 4. 6. 8	4. 8. 25. 8	20. 59. 31	3. 28. 7	5. 4	
						5. 9	
26	Sa.	2. 5. 3. 41	4. 12. 28. 3	21. 10. 3	3. 22. 8		
27	Su.	2. 6. 1. 12	4. 16. 31. 3	21. 20. 13	3. 16. 4	6. 4	
28	M.	2. 6. 58. 42	4. 20. 34. 7	21. 30. 2	3. 9. 5	6. 9	
29	Tu.	2. 7. 56. 10	4. 24. 38. 6	21. 39. 29	3. 2. 2	7. 3	
30	W.	2. 8. 53. 37	4. 28. 42. 9	21. 48. 32	2. 54. 4	7. 8	
						8. 2	
31	Th.	2. 9. 51. 3	4. 32. 47. 6	21. 57. 13	2. 46. 2		

III. MAY 1787. [51]

Days.	Semidia- meter of the Sun,	Time of D ^o passing the Meridian.	Hourly Motion of the Sun.	Logarithm of the Sun's Distance.	Place of the Moon's Node.
	M. S.	M. S.	M. S.		S. D. M.
1	15. 54, 6	1. 5, 9	2. 25, 3	0. 003708	9. 8. 17
7	15. 53, 2	1. 6, 4	2. 24, 9	0. 004330	9. 7. 58
13	15. 52, 0	1. 6, 9	2. 24, 6	0. 004919	9. 7. 39
19	15. 50, 9	1. 7, 4	2. 24, 2	0. 005436	9. 7. 20
25	15. 49, 8	1. 7, 8	2. 23, 9	0. 005877	9. 7. 1

The Eclipses of the Satellites of JUPITER will not be
visible this Month, JUPITER being too
near the Sun.

Days.	Heliocen- tric Lon- gitude.	Heliocen- tric Lati- tude.	Geocen- tric Lon- gitude.	Geocen- tric La- titude.	Declina- tion.	Passage over Merid.
	S. D. M.	D. M.	S. D. M.	D. M.	D. M.	H. M.

M E R C U R Y. Gr. Elong. 13^d.

1	8. 13. 6	3. 13 S	0. 19. 0	2. 16 S	5. 21 N	22. 37
4	8. 21. 21	4. 5	0. 20. 4	2. 43	5. 21	22. 31
7	8. 29. 42	4. 52	0. 21. 47	3. 1	5. 41	22. 27
10	9. 8. 14	5. 33	0. 24. 3	3. 12	6. 22	22. 24
13	9. 17. 3	6. 9	0. 26. 50	3. 17	7. 18	22. 24
16	9. 26. 17	6. 36	1. 0. 5	3. 15	8. 28	22. 25
19	10. 6. 1	6. 53	1. 3. 45	3. 7	9. 51	22. 27
22	10. 16. 26	7. 0	1. 7. 49	2. 53	11. 24	22. 31
25	10. 27. 38	6. 51	1. 12. 15	2. 35	13. 5	22. 36
28	11. 9. 50	6. 24	1. 17. 3	2. 11	14. 51	22. 43
31	11. 23. 10	5. 34	1. 22. 14	1. 44	16. 40	22. 51

V E N U S.

1	9. 22. 5	2. 3 S	11. 29. 17	1. 27 S	1. 37 S	21. 25
7	10. 1. 34	2. 28	0. 6. 10	1. 40	0. 55 N	21. 28
13	10. 11. 3	2. 49	0. 13. 6	1. 50	3. 30	21. 30
19	10. 20. 32	3. 5	0. 20. 5	1. 56	6. 4	21. 33
25	11. 0. 2	3. 17	0. 27. 6	1. 59	8. 36	21. 35

M A R S.

1	10. 26. 46	1. 50 S	11. 27. 8	1. 19 S	2. 21 S	21. 16
7	11. 0. 34	1. 49	0. 1. 44	1. 19	0. 31 S	21. 10
13	11. 4. 23	1. 47	0. 6. 19	1. 19	1. 19 N	21. 4
19	11. 8. 11	1. 44	0. 10. 53	1. 18	3. 7	20. 57
25	11. 12. 0	1. 41	0. 15. 25	1. 17	4. 53	20. 49

J U P I T E R. δ 24^d. 19^b $\frac{1}{2}$.

1	2. 1. 50	0. 48 S	1. 28. 24	0. 40 S	19. 10 N	1. 11
7	2. 2. 22	0. 47	1. 29. 46	0. 40	19. 29	0. 54
13	2. 2. 53	0. 47	2. 1. 10	0. 39	19. 47	0. 36
19	2. 3. 25	0. 46	2. 2. 34	0. 38	20. 4	0. 18
25	2. 3. 57	0. 45	2. 3. 58	0. 38	20. 21	0. 0

S A T U R N. $\square$ 19^d. 7^h.

1	10. 22. 9	1. 16 S	10. 27. 46	1. 14 S	13. 25 S	19. 25
7	10. 22. 20	1. 16	10. 28. 6	1. 15	13. 19	19. 3
13	10. 22. 31	1. 17	10. 28. 23	1. 16	13. 14	18. 41
19	10. 22. 43	1. 17	10. 28. 37	1. 18	13. 11	18. 18
25	10. 22. 54	1. 18	10. 28. 47	1. 19	13. 8	17. 54

V. M A Y 1787. [53]

Days of the Month.	Days of the Week.	Moon's Longitude at Noon.	Moon's Longitude at Midnight.	Moon's Latitude at Noon.	Moon's Latitude at Midn.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
1	Tu.	7. 1. 51. 50	7. 7. 55. 32	4. 36. 6 S	4. 20. 53 S
2	W.	7. 13. 57. 10	7. 19. 56. 58	4. 2. 48	3. 42. 5
3	Th.	7. 25. 55. 5	8. 1. 51. 46	3. 18. 59	2. 53. 46
4	F.	8. 7. 47. 11	8. 13. 41. 44	2. 26. 42	1. 58. 5
5	Sa.	8. 19. 35. 38	8. 25. 29. 23	1. 28. 12	0. 57. 23 S
6	Su.	9. 1. 23. 20	9. 7. 18. 0	0. 25. 52 S	0. 6. 3 N
7	M.	9. 13. 13. 52	9. 19. 11. 31	0. 38. 5 N	1. 9. 50
8	Tu.	9. 25. 11. 30	10. 1. 14. 26	1. 41. 4	2. 11. 26
9	W.	10. 7. 20. 54	10. 13. 31. 34	2. 40. 36	3. 8. 14
10	Th.	10. 19. 47. 2	10. 26. 7. 51	3. 33. 59	3. 57. 28
11	F.	11. 2. 34. 36	11. 9. 7. 44	4. 18. 20	4. 36. 10
12	Sa.	11. 15. 47. 40	11. 22. 34. 41	4. 50. 36	5. 1. 15
13	Su.	11. 29. 28. 57	0. 6. 30. 24	5. 7. 45	5. 9. 47
14	M.	0. 13. 38. 56	0. 20. 54. 5	5. 7. 4	4. 59. 26
15	Tu.	0. 28. 15. 14	1. 5. 41. 37	4. 46. 47	4. 29. 11
16	W.	1. 13. 12. 14	1. 20. 45. 52	4. 6. 46	3. 39. 52
17	Th.	1. 28. 21. 24	2. 5. 57. 24	3. 8. 58	2. 34. 37
18	F.	2. 13. 32. 40	2. 21. 5. 57	1. 57. 33	1. 18. 32 N
19	Sa.	2. 28. 36. 10	3. 6. 2. 21	0. 38. 23 N	0. 2. 8 S
20	Su.	3. 13. 23. 45	3. 20. 39. 47	0. 42. 11 S	1. 21. 6
21	M.	3. 27. 50. 2	4. 4. 54. 18	1. 58. 16	2. 33. 4
22	Tu.	4. 11. 52. 27	4. 18. 44. 34	3. 5. 5	3. 33. 57
23	W.	4. 25. 30. 46	5. 2. 11. 16	3. 59. 23	4. 21. 10
24	Th.	5. 8. 46. 22	5. 15. 16. 23	4. 39. 13	4. 53. 24
25	F.	5. 21. 41. 40	5. 28. 2. 36	5. 3. 43	5. 10. 10
26	Sa.	6. 4. 19. 33	6. 10. 32. 53	5. 12. 49	5. 11. 44
27	Su.	6. 16. 42. 57	6. 22. 50. 8	5. 7. 3	4. 58. 54
28	M.	6. 28. 54. 44	7. 4. 57. 7	4. 47. 23	4. 32. 45
29	Tu.	7. 10. 57. 30	7. 16. 56. 16	4. 15. 10	3. 54. 50
30	W.	7. 22. 53. 35	7. 28. 49. 45	3. 32. 2	3. 6. 58
31	Th.	8. 4. 45. 0	8. 10. 39. 30	2. 39. 54	2. 11. 10

[54]		M A Y 1787.					VI.	
Days of the Month.	Days of the Week.	D's Age.	D's Passage over Merid.	D's Right Ascens. at Noon.	D's Right Ascens. at Midn.	D's Declination at Noon.	D's Declination at Midn.	
			H. M.	D. M.	D. M.	D. M.	D. M.	
1	Tu.	15	11. 39	208. 2	214. 4	16. 27 S	18. 17 S	
2	W.	16	12. 26	220. 12	226. 26	19. 54	21. 19	
3	Th.	17	13. 15	232. 44	239. 7	22. 29	23. 24	
4	F.	18	14. 5	245. 34	252. 3	24. 3	24. 25	
5	Sa.	19	14. 55	258. 33	265. 3	24. 31	24. 21	
6	Su.	20	15. 44	271. 31	277. 57	23. 53	23. 10	
7	M.	21	16. 32	284. 19	290. 36	22. 11	20. 56	
8	Tu.	22	17. 19	296. 49	302. 58	19. 28	17. 46	
9	W.	23	18. 5	309. 3	315. 4	15. 52	13. 47	
10	Th.	24	18. 50	321. 3	327. 1	11. 31	9. 6	
11	F.	25	19. 35	332. 59	338. 59	6. 33	3. 53 S	
12	Sa.	26	20. 22	345. 3	351. 12	1. 8 S	1. 40 N	
13	Su.	27	21. 12	357. 29	3. 55	4. 30 N	7. 20	
14	M.	28	22. 6	10. 32	17. 23	10. 6	12. 47	
15	Tu.	29	23. 4	24. 28	31. 49	15. 19	17. 40	
16	W.	1	0	39. 26	47. 17	19. 44	21. 30	
17	Th.	2	0. 5	55. 21	63. 34	22. 53	23. 52	
18	F.	3	1. 9	71. 53	80. 13	24. 24	24. 28	
19	Sa.	4	2. 14	88. 28	96. 35	24. 6	23. 18	
20	Su.	5	3. 17	104. 29	112. 8	22. 5	20. 32	
21	M.	6	4. 15	119. 31	126. 37	18. 41	16. 35	
22	Tu.	7	5. 8	133. 27	140. 3	14. 17	11. 50	
23	W.	8	5. 56	146. 25	152. 36	9. 16	6. 38	
24	Th.	9	6. 42	158. 38	164. 33	3. 58 N	1. 18 N	
25	F.	10	7. 26	170. 23	176. 9	1. 21 S	3. 58 S	
26	Sa.	11	8. 9	181. 53	187. 38	6. 30	8. 57	
27	Su.	12	8. 53	193. 24	199. 13	11. 18	13. 31	
28	M.	13	9. 37	205. 7	211. 5	15. 35	17. 28	
29	Tu.	14	10. 23	217. 8	223. 17	19. 10	20. 40	
30	W.	15	11. 11	229. 31	235. 51	21. 56	22. 58	
31	Th.	16	12. 1	242. 15	248. 43	23. 44	24. 14	

VII. M A Y 1787. [55]

Days of the Month.	Days of the Week.	Semidr. D at Noon.	Semidr. D at Mid-night.	Hor. Par. D at Noon.	Hor. Par. D at Midnight.	Propor. Lo- gar. at Noon.	Propor. Lo- gar. at Midn.
		M. S.	M. S.	M. S.	M. S.		
1	Tu.	14. 55	14. 53	54. 45	54. 36	5169	5181
2	W.	14. 51	14. 49	54. 29	54. 22	5190	5199
3	Th.	14. 47	14. 46	54. 17	54. 13	5206	5211
4	F.	14. 46	14. 45	54. 10	54. 9	5215	5217
5	Sa.	14. 46	14. 46	54. 10	54. 12	5215	5213
6	Su.	14. 47	14. 49	54. 16	54. 23	5207	5198
7	M.	14. 52	14. 54	54. 32	54. 42	5186	5173
8	Tu.	14. 58	15. 2	54. 54	55. 9	5157	5137
9	W.	15. 6	15. 12	55. 26	55. 46	5115	5089
10	Th.	15. 18	15. 24	56. 7	56. 31	5062	5031
11	F.	15. 31	15. 38	56. 57	57. 24	4998	4964
12	Sa.	15. 46	15. 54	57. 52	58. 20	4928	4893
13	Su.	16. 1	16. 9	58. 48	59. 16	4859	4824
14	M.	16. 16	16. 23	59. 43	60. 8	4792	4761
15	Tu.	16. 29	16. 35	60. 31	60. 50	4734	4711
16	W.	16. 39	16. 42	61. 6	61. 17	4692	4679
17	Th.	16. 44	16. 44	61. 23	61. 25	4672	4670
18	F.	16. 43	16. 41	61. 22	61. 14	4673	4683
19	Sa.	16. 38	16. 34	61. 2	60. 45	4697	4716
20	Su.	16. 28	16. 22	60. 27	60. 5	4739	4765
21	M.	16. 16	16. 9	59. 40	59. 15	4795	4826
22	Tu.	16. 2	15. 54	58. 49	58. 22	4858	4891
23	W.	15. 47	15. 40	57. 56	57. 30	4923	4956
24	Th.	15. 34	15. 27	57. 6	56. 42	4986	5017
25	F.	15. 21	15. 15	56. 21	56. 0	5044	5071
26	Sa.	15. 11	15. 6	55. 42	55. 25	5094	5116
27	Su.	15. 2	14. 58	55. 10	54. 57	5136	5153
28	M.	14. 55	14. 53	54. 45	54. 36	5169	5181
29	Tu.	14. 51	14. 49	54. 28	54. 21	5191	5201
30	W.	14. 47	14. 46	54. 15	54. 11	5209	5214
31	Th.	14. 45	14. 45	54. 8	54. 6	5218	5221

Distances of D's Center from Sun, and from Stars east of her.

Days.	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D. M. S.	S.	D. M. S.	S.	D. M. S.	S.	D. M. S.	S.	D. M. S.	S.	D. M. S.	S.	D. M. S.	S.	D. M. S.	S.
1		83. 34	6	88. 13. 19		86. 52. 39		85. 32. 8		84. 11. 44		82. 51. 29		81. 31. 25		80. 11. 30	
2	α Aquilæ.	78. 51. 46		77. 32. 12		76 12. 51		74. 53. 42		73. 34. 46		72. 16. 4		70. 57. 37		69. 39. 25	
3		63. 21. 29		57. 3. 50		65. 46. 29		64. 29. 27		63. 12. 44							
3										88. 1. 47		86. 41. 14		85. 20. 45		84. 0. 20	
4	Fomal- haut.	82. 40. 0		81. 19. 45		79. 59. 37		78. 39. 35		77. 19. 40		75. 59. 53		74. 40. 14		73. 20. 43	
5		72. 1. 21		70. 42. 6		69. 23. 2		68. 4. 8		66. 45. 25		65. 26. 54		64. 8. 36		62. 50. 32	
6		61. 32. 42		60. 15. 6		58. 57. 47		57. 40. 46		56. 24. 1							
6										74. 10. 20		72. 44. 13		71. 18. 4		69. 51. 52	
7		68. 25. 39		66. 59. 23		65. 33. 6		64. 6. 46		62. 43. 24		61. 13. 59		59. 47. 32		58. 21. 4	
8	α Pegasi.	56. 54. 31		55. 28. 1		54. 1. 27		52. 34. 53		51. 8. 18		49. 41. 42		48. 15. 9		46. 48. 38	
9		45. 22. 10		43. 55. 43		42. 29. 23		41. 3. 13		39. 37. 12		38. 11. 24		36. 45. 54		35. 20. 43	
10		33. 55. 51															
7		112. 32. 14		111. 8. 59		120. 48. 12		119. 25. 54		118. 3. 29		116. 40. 55		115. 18. 11		113. 55. 17	
8		101. 20. 37		99. 55. 39		98. 30. 24		108. 21. 55		106. 58. 6		105. 34. 5		104. 9. 49		102. 45. 20	
9	The Sun.	89. 53. 9		88. 25. 54		86. 58. 18		97. 4. 54		95. 39. 8		94. 13. 5		92. 46. 44		91. 20. 5	
10		78. 5. 39		76. 35. 25		75. 4. 57		85. 30. 23		84. 2. 7		82. 35. 31		81. 4. 32		79. 35. 12	
11		65. 53. 46		64. 20. 27		62. 46. 42		73. 34. 6		72. 2. 51		70. 31. 12		68. 59. 8		67. 26. 39	
12								61. 12. 31		59. 37. 55		58. 2. 52		56. 27. 23		54. 51. 29	

IX. MAY 1787. [57]

Days.	Stars Names.	Noon.	3 Hours.	6 Hours.	9 Hours.	12 Hours.	15 Hours.	18 Hours.	21 Hours.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
13	The Sun.	53. 15. 8	51. 38. 23	50. 1. 9	48. 23. 31	46. 45. 27	45. 6. 58	43. 28. 4	41. 48. 44
14		40. 9. 0							
18		73. 19. 52	71. 26. 21	69. 32. 59	67. 39. 46	65. 46. 42	63. 53. 49	62. 1. 10	60. 8. 45
19	Regulus.	58. 16. 33	56. 24. 37	54. 33. 0	52. 41. 40	50. 50. 38	48. 59. 56	47. 9. 36	45. 19. 38
20		43. 30. 1	41. 40. 47	39. 51. 59	38. 3. 36	36. 15. 39	34. 28. 8	32. 41. 8	30. 54. 38
21		29. 8. 39	27. 23. 13	25. 38. 23	23. 54. 9	22. 10. 32			
21									
22		68. 56. 25	67. 12. 52	65. 29. 44	63. 47. 0	62. 4. 40	60. 22. 44	58. 41. 12	57. 0. 3
23	Spica π	55. 19. 19	53. 38. 58	51. 58. 59	50. 19. 23	48. 40. 10	47. 1. 19	45. 22. 50	43. 44. 42
24		42. 6. 57	40. 29. 33	38. 52. 29	37. 15. 46	35. 39. 24	34. 3. 21	32. 27. 39	30. 52. 17
25		29. 17. 15	27. 42. 33	26. 8. 12	24. 34. 11	23. 0. 30			
25									
26		62. 13. 59	60. 40. 48	59. 7. 48	57. 35. 2	56. 2. 28	54. 30. 8	52. 57. 59	51. 26. 1
27	Antares.	49. 54. 15	48. 22. 39	46. 51. 12	45. 19. 56	43. 48. 49	42. 17. 52	40. 47. 4	39. 16. 25
28		37. 45. 54	36. 15. 31	34. 45. 16	33. 15. 8	31. 45. 7			
28									
29	Aquila.	81. 32. 19	80. 12. 44	78. 53. 19	77. 34. 3	76. 14. 57	74. 56. 4	73. 37. 24	72. 18. 55
30		71. 0. 39	69. 42. 37	68. 24. 51	67. 7. 18	65. 50. 0			
30									
31	Pomal- haut.	85. 25. 23	84. 5. 9	82. 45. 0	81. 24. 54	80. 4. 53	78. 44. 57	77. 25. 7	76. 5. 23
1.		74. 45. 41							

XI.		M A Y 1787.										[59]					
Days.	Stars. Names	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours		15 Hours.		18 Hours.		21 Hours.	
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	
19	The Sun.	44. 5. 57	45. 48. 23	47. 30. 29	49. 12. 15	50. 53. 40	52. 34. 43	54. 15. 23	55. 55. 41	57. 26. 55	59. 4. 4	61. 13. 7	62. 47. 8	64. 11. 24	65. 49. 21	67. 26. 55	69. 4. 4
20		57. 35. 36	59. 15. 8	60. 54. 17	62. 33. 2	64. 11. 24	65. 49. 21	67. 26. 55	69. 4. 4	71. 13. 7	72. 47. 8	74. 11. 24	75. 28. 44	77. 3. 55	78. 38. 43	80. 13. 7	81. 47. 8
21		70. 40. 50	72. 17. 12	73. 53. 10	75. 28. 44	77. 3. 55	78. 38. 43	80. 13. 7	81. 47. 8	83. 20. 46	84. 54. 1	86. 26. 54	87. 59. 25	89. 31. 34	91. 3. 22	92. 34. 49	94. 5. 55
22		83. 20. 46	84. 54. 1	86. 26. 54	87. 59. 25	89. 31. 34	91. 3. 22	92. 34. 49	94. 5. 55	96. 36. 41	97. 7. 6	98. 37. 13	100. 6. 59	101. 36. 27	103. 5. 36	104. 34. 27	106. 3. 1
23		95. 36. 41	97. 7. 6	98. 37. 13	100. 6. 59	101. 36. 27	103. 5. 36	104. 34. 27	106. 3. 1	107. 31. 17	108. 59. 16	110. 26. 59	111. 54. 26	113. 21. 37	114. 48. 33	116. 15. 14	117. 41. 41
24		107. 31. 17	108. 59. 16	110. 26. 59	111. 54. 26	113. 21. 37	114. 48. 33	116. 15. 14	117. 41. 41	119. 7. 54	120. 33. 54						
25		119. 7. 54	120. 33. 54														
26																	
23	Pollux.	49. 42. 6	51. 18. 13	52. 54. 6	54. 29. 43	56. 5. 6	57. 40. 13	59. 15. 5	60. 49. 42	62. 24. 4	63. 58. 11	65. 32. 4	67. 5. 42	68. 39. 5	70. 13. 10	71. 47. 14	72. 40. 1
24		62. 24. 4	63. 58. 11	65. 32. 4	67. 5. 42	68. 39. 5	70. 13. 10	71. 47. 14	72. 40. 1	74. 9. 30	75. 43. 17	76. 57. 10	78. 11. 10	79. 25. 10	80. 39. 10	81. 53. 10	82. 67. 10
25		74. 9. 30	75. 43. 17	76. 57. 10	78. 11. 10	79. 25. 10	80. 39. 10	81. 53. 10	82. 67. 10	83. 81. 10	84. 95. 10	85. 109. 10	86. 123. 10	87. 137. 10	88. 151. 10	89. 165. 10	90. 179. 10
25	Regulus.	37. 49. 25	39. 21. 56	40. 54. 17	42. 26. 28	43. 58. 29	45. 30. 20	47. 2. 1	48. 33. 33	50. 4. 56	51. 36. 10	53. 7. 15	54. 38. 11	56. 8. 59	57. 39. 39	59. 10. 11	60. 40. 36
26		50. 4. 56	51. 36. 10	53. 7. 15	54. 38. 11	56. 8. 59	57. 39. 39	59. 10. 11	60. 40. 36	62. 10. 54	63. 41. 5	65. 11. 10	66. 41. 8	68. 11. 0	69. 40. 46	71. 10. 26	72. 40. 1
27		62. 10. 54	63. 41. 5	65. 11. 10	66. 41. 8	68. 11. 0	69. 40. 46	71. 10. 26	72. 40. 1	74. 9. 30	75. 43. 17	76. 57. 10	78. 11. 10	79. 25. 10	80. 39. 10	81. 53. 10	82. 67. 10
28		74. 9. 30	75. 43. 17	76. 57. 10	78. 11. 10	79. 25. 10	80. 39. 10	81. 53. 10	82. 67. 10	83. 81. 10	84. 95. 10	85. 109. 10	86. 123. 10	87. 137. 10	88. 151. 10	89. 165. 10	90. 179. 10
29	Spica π	20. 9. 46	21. 38. 33	23. 7. 21	24. 36. 9	26. 4. 58	27. 33. 46	29. 2. 34	30. 31. 22	32. 0. 9	33. 28. 55	34. 57. 39	36. 26. 23	37. 55. 6	39. 23. 48	40. 52. 29	42. 21. 9
29		32. 0. 9	33. 28. 55	34. 57. 39	36. 26. 23	37. 55. 6	39. 23. 48	40. 52. 29	42. 21. 9	43. 49. 48	45. 18. 27	46. 47. 5	48. 15. 43	49. 44. 21	51. 12. 59	52. 41. 37	54. 10. 15
30		43. 49. 48	45. 18. 27	46. 47. 5	48. 15. 43	49. 44. 21	51. 12. 59	52. 41. 37	54. 10. 15	55. 38. 53							
31		55. 38. 53															
J. 1																	

The Satellites of JUPITER will not be visible this
Month, JUPITER being too near
the SUN.

Days of the Month.	Days of the Week.	Sundays, Holidays, &c.	Phases of the Moon.
			D. H. M.
			Last Quarter - 8. 11. 35
			New Moon - 15. 3. 50
			First Quarter - 21. 23. 45
			Full Moon - 30. 2. 38
1	F.	Nicomede.	
2	Sa.		
3	Su.	Trin. Su. [of H. T. 1 ret.	Other Phenomena
4	M.	K. G. M. A. 1738. On mor.	
5	Tu.	Pr. Ern. Aug. b. Bonif.	D. H. M.
6	W.	Oxford Term begins.	1. 3.48 ☾ Ophiuchi.
7	Th.		5.42 ☽ Ophiuchi.
8	F.	Trinity Term begins.	3. 3.40 ☾ ♄
9	Sa.		6.13 ☾ ♄
10	Su.	1st Su. after Tr. Pr. Am. b.	7. ☽ diff. Lat. 14'
11	M.	Su. Barnabas. In 3 days	9. ☽ Stationary.
12	Tu.	[of H. T. 2 ret.	1. 2.24 ☾ ♄
13	W.		13. 8.34 ☾ Pleiadum.
14	Th.		15. ☽ ecl. visible.
15	F.		18.20.16 ☽ ♄
16	Sa.		19. 0.43 ☾ ♄
			9.27 ☾ ♄
17	Su.	2d Su. after Tr. S. Alban.	21. 2. 6 ☽ enters ☽
18	M.	In 15 days of H. Tr. 3 r.	6.13 ☽ ♄
19	Tu.		27. 6. 9 ☽ ♄
20	W.	Trans. of Edw. K. W. Sax.	28. 9.48 ☽ Ophiuchi.
21	Th.		11.42 ☽ Ophiuchi.
22	F.		30. ☽ ecl. invisible.
23	Sa.		9.33 ☽ ♄
			12. 5 ☾ ♄
24	Su.	[Bapt. 3d Su. after Tr. St. John	
25	M.	In 3 weeks of H. T. 4 r.	
26	Tu.		
27	W.	Trinity Term ends.	
28	Th.		
29	F.	St. Peter.	
30	Sa.		

Days of the Month.	Days of the Week.	Sun's Longitude.	Sun's Right Asc. in Time.	Sun's Declin. North.	Equat. of Time. Sub.	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M. S.	S.
1	F.	2. 10. 48. 28	4. 36. 52. 7	22. 5. 30	2. 37. 6	8, 8
2	Sa.	2. 11. 45. 52	4. 40. 58. 2	22. 13. 26	2. 28. 8	9, 4
3	Su.	2. 12. 43. 16	4. 45. 4. 2	22. 20. 58	2. 19. 4	9, 8
4	M.	2. 13. 40. 39	4. 49. 10. 6	22. 28. 6	2. 9. 6	10, 1
5	Tu.	2. 14. 38. 1	4. 53. 17. 3	22. 34. 51	1. 59. 5	10, 5
6	W.	2. 15. 35. 23	4. 57. 24. 3	22. 41. 13	1. 49. 0	10, 8
7	Th.	2. 16. 32. 44	5. 1. 31. 7	22. 47. 11	1. 38. 2	11, 2
8	F.	2. 17. 30. 5	5. 5. 39. 5	22. 52. 45	1. 27. 0	11, 5
9	Sa.	2. 18. 27. 26	5. 9. 47. 6	22. 57. 55	1. 15. 5	11, 7
10	Su.	2. 19. 24. 46	5. 13. 55. 9	23. 2. 40	1. 3. 8	11, 9
11	M.	2. 20. 22. 6	5. 18. 4. 4	23. 7. 1	0. 51. 9	12, 2
12	Tu.	2. 21. 19. 25	5. 22. 13. 2	23. 10. 58	0. 39. 7	12, 4
13	W.	2. 22. 16. 44	5. 26. 22. 2	23. 14. 31	0. 27. 3	12, 6
14	Th.	2. 23. 14. 3	5. 30. 31. 4	23. 17. 39	0. 14. 7	12, 7
15	F.	2. 24. 11. 21	5. 34. 40. 7	23. 20. 22	0. 2. 0	12, 9
16	Sa.	2. 25. 8. 39	5. 38. 50. 1	23. 22. 41	Ad: 10. 9	13, 0
17	Su.	2. 26. 5. 56	5. 42. 59. 6	23. 24. 35	0. 23. 9	13, 0
18	M.	2. 27. 3. 13	5. 47. 9. 2	23. 26. 4	0. 36. 9	13, 0
19	Tu.	2. 28. 0. 29	5. 51. 18. 9	23. 27. 8	0. 49. 9	13, 0
20	W.	2. 28. 57. 44	5. 55. 28. 4	23. 27. 47	1. 2. 9	13, 0
21	Th.	2. 29. 54. 59	5. 59. 38. 1	23. 28. 2	1. 15. 9	13, 0
22	F.	3. 0. 52. 13	6. 3. 47. 7	23. 27. 52	1. 28. 9	12, 9
23	Sa.	3. 1. 49. 26	6. 7. 57. 2	23. 27. 17	1. 41. 8	12, 9
24	Su.	3. 2. 46. 39	6. 12. 6. 6	23. 26. 17	1. 54. 7	12, 7
25	M.	3. 3. 43. 51	6. 16. 15. 9	23. 24. 52	2. 7. 4	12, 5
26	Tu.	3. 4. 41. 3	6. 20. 25. 0	23. 23. 3	2. 19. 9	12, 4
27	W.	3. 5. 38. 14	6. 24. 34. 0	23. 20. 49	2. 32. 3	12, 2
28	Th.	3. 6. 35. 25	6. 28. 42. 8	23. 18. 11	2. 44. 5	12, 1
29	F.	3. 7. 32. 35	6. 32. 51. 5	23. 15. 8	2. 56. 6	11, 9
30	Sa.	3. 8. 29. 46	6. 36. 59. 9	23. 11. 41	3. 8. 5	

III.

JUNE 1787.

[63]

Days of the Month.	Semidia- meter of the Sun.	Time of D ^o passing the Meridian.	Hourly Motion of the Sun.	Logarithm of the Sun's Distance.	Place of the Moon's Node.
	M. S.	M. S.	M. S.		S. D. M.
1	15. 48, 8	1. 8, 3	2. 23, 6	0, 006320	9. 6. 39
7	15. 48, 2	1. 8, 6	2. 23, 4	0, 006655	9. 6. 20
13	15. 47, 6	1. 8, 7	2. 23, 2	0, 006924	9. 6. 1
19	15. 47, 2	1. 8, 8	2. 23, 1	0, 007105	9. 5. 42
25	15. 47, 0	1. 8, 8	2. 23, 0	0, 007193	9. 5. 23

The Eclipses of JUPITER's Satellites will not be
visible this Month, JUPITER being too
near the SUN.

[64]

JUNE 1787.

IV.

Days.	Heliocen- tric Lon- gitude.	Heliocen- tric Lati- tude.	Geocen- tric Lon- gitude.	Geocen- tric La- titude.	Declina- tion.	Passage over Merid.
	S. D. M.	D. M.	S. D. M.	D. M.	D. M.	H. M.

MERCURY. Sup. of 16th. 2nd.

1	11. 27. 53	5. 12 S	1. 24. 3	1. 35 S	17. 16 N	22. 55
4	0. 12. 57	3. 49	1. 29. 41	1. 3	19. 4	23. 6
7	0. 29. 22	2. 0 S	2. 5. 40	0. 31 S	20. 46	23. 18
10	1. 17. 2	0. 9 N	2. 11. 57	0. 2 N	22. 17	23. 33
13	2. 5. 37	2. 23	2. 18. 25	0. 33	23. 31	23. 48
16	2. 24. 33	4. 24	2. 25. 0	1. 1	24. 24	0
19	3. 13. 12	5. 54	3. 1. 34	1. 24	24. 52	0. 16
22	4. 0. 57	6. 46	3. 7. 59	1. 41	24. 54	0. 32
25	4. 17. 26	7. 0	3. 14. 11	1. 51	24. 33	0. 46
28	5. 2. 28	6. 43	3. 20. 7	1. 54	23. 50	1. 0
30	5. 11. 43	6. 18	3. 23. 55	1. 53	23. 12	1. 8

VENUS.

1	11. 11. 8	3. 23 S	1. 5. 19	1. 58 S	11. 27 N	21. 38
7	11. 20. 39	3. 22	1. 12. 24	1. 54	13. 46	21. 41
13	0. 0. 11	3. 16	1. 19. 30	1. 47	15. 54	21. 44
19	0. 9. 44	3. 4	1. 26. 38	1. 38	17. 50	21. 48
25	0. 49. 18	2. 48	2. 3. 47	1. 27	19. 31	21. 53

MARS.

1	11. 16. 25	1. 38 S	0. 20. 39	1. 15 S	6. 55 N	20. 40
7	11. 20. 12	1. 34	0. 25. 8	1. 14	8. 36	20. 32
13	11. 23. 59	1. 30	0. 29. 33	1. 12	10. 13	20. 24
19	11. 27. 44	1. 25	1. 3. 57	1. 9	11. 46	20. 16
25	0. 1. 28	1. 21	1. 8. 18	1. 6	13. 14	20. 8

JUPITER.

1	2. 4. 34	0. 45 S	2. 5. 36	0. 37 S	20. 39 N	23. 35
7	2. 5. 6	0. 44	2. 7. 0	0. 37	20. 54	23. 17
13	2. 5. 37	0. 43	2. 8. 24	0. 36	21. 8	22. 58
19	2. 6. 9	0. 43	2. 9. 46	0. 36	21. 21	22. 38
25	2. 6. 41	0. 42	2. 11. 7	0. 36	21. 33	22. 19

SATURN.

1	10. 23. 7	1. 18 S	10. 28. 55	1. 20 S	13. 7 S	17. 26
7	10. 23. 18	1. 19	10. 28. 57	1. 21	13. 7	17. 2
13	10. 23. 30	1. 19	10. 28. 56	1. 23	13. 9	16. 37
19	10. 23. 41	1. 19	10. 28. 52	1. 24	13. 12	16. 12
25	10. 23. 52	1. 20	10. 28. 44	1. 25	13. 15	15. 46

V. JUNE 1787. [65]

Days of the Month.	Days of the Week.	Moon's Longitude at Noon.	Moon's Longitude at Midnight.	Moon's Latitude at Noon.	Moon's Latitude at Midn.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
1	F.	8. 16. 33. 53	8. 22. 28. 0	1. 41. 1 S	1. 9. 45 S
2	Sa.	8. 28. 22. 17	9. 4. 16. 59	0. 37. 42 S	0. 5. 11 S
3	Su.	9. 10. 12. 30	9. 16. 9. 16	0. 27. 31 N	1. 0. 1 N
4	M.	9. 22. 7. 19	9. 28. 7. 25	1. 32. 2	2. 3. 12
5	Tu.	10. 4. 9. 50	10. 10. 15. 4	2. 33. 14	3. 1. 45
6	W.	10. 16. 23. 35	10. 22. 35. 50	3. 28. 27	3. 52. 58
7	Th.	10. 28. 52. 21	11. 5. 13. 32	4. 15. 0	4. 34. 11
8	F.	11. 11. 39. 54	11. 18. 11. 50	4. 50. 12	5. 2. 42
9	Sa.	11. 24. 49. 44	0. 1. 33. 52	5. 11. 24	5. 16. 1
10	Su.	0. 8. 24. 30	0. 15. 21. 40	5. 16. 14	5. 11. 51
11	M.	0. 22. 25. 25	0. 29. 35. 32	5. 2. 43	4. 48. 44
12	Tu.	1. 6. 51. 42	1. 14. 13. 24	4. 29. 59	4. 6. 34
13	W.	1. 21. 39. 58	1. 29. 10. 28	3. 38. 43	3. 6. 53
14	Th.	2. 6. 43. 58	2. 14. 19. 17	2. 31. 32	1. 53. 23
15	F.	2. 21. 55. 13	2. 29. 30. 35	1. 13. 6 N	0. 31. 35 N
16	Sa.	3. 7. 4. 5	3. 14. 34. 42	0. 10. 21 S	0. 51. 59 S
17	Su.	3. 22. 1. 17	3. 29. 23. 3	1. 32. 5	2. 10. 22
18	M.	4. 6. 39. 16	4. 13. 49. 23	2. 46. 3	3. 18. 34
19	Tu.	4. 20. 53. 3	4. 27. 50. 9	3. 47. 35	4. 12. 44
20	W.	5. 4. 40. 33	5. 11. 24. 26	4. 33. 52	4. 50. 51
21	Th.	5. 18. 1. 59	5. 24. 33. 29	5. 3. 40	5. 12. 21
22	F.	6. 0. 59. 20	6. 7. 19. 56	5. 16. 57	5. 17. 37
23	Sa.	6. 13. 35. 46	6. 19. 47. 17	5. 14. 29	5. 7. 41
24	Su.	6. 25. 55. 1	7. 1. 59. 25	4. 57. 28	4. 43. 58
25	M.	7. 8. 1. 1	7. 14. 0. 16	4. 27. 26	4. 8. 6
26	Tu.	7. 19. 57. 38	7. 25. 53. 35	3. 46. 9	3. 21. 51
27	W.	8. 1. 48. 31	8. 7. 42. 49	2. 55. 27	2. 27. 13
28	Th.	8. 13. 36. 54	8. 19. 31. 4	1. 57. 25	1. 26. 22
29	F.	8. 25. 25. 39	9. 1. 20. 56	0. 54. 20 S	0. 21. 40 S
30	Sa.	9. 7. 17. 14	9. 13. 14. 48	0. 11. 21 N	0. 44. 20 N

[66]		J U N E 1787.					VI.
Days of the Month.	Days of the Week.	D's Age.	D's Passage over Merid.	D's Right Ascension at Noon.	D's Right Ascens. at Midn.	D's Declination at Noon.	D's Declination at Midn.
			H. M.	D. M.	D. M.	D. M.	D. M.
1	F.	17	12. 50	255. 13	261. 43	24. 28 S	24. 25 S
2	Sa.	18	13. 39	268. 13	274. 40	24. 5	23. 29
3	Su.	19	14. 27	281. 4	287. 24	22. 37	21. 30
4	M.	20	15. 14	293. 38	299. 48	20. 8	18. 33
5	Tu.	21	15. 59	305. 52	311. 51	16. 45	14. 46
6	W.	22	16. 43	317. 47	323. 40	12. 37	10. 19
7	Th.	23	17. 28	329. 31	335. 22	7. 53	5. 21
8	F.	24	18. 13	341. 15	347. 11	2. 44 S	0. 2 S
9	Si.	25	18. 59	353. 12	359. 20	2. 42 N	5. 27 N
10	Su.	26	19. 49	5. 38	12. 6	8. 11	10. 51
11	M.	27	20. 43	18. 48	25. 45	13. 25	15. 50
12	Tu.	28	21. 41	32. 58	40. 28	18. 4	20. 3
13	W.	29	22. 44	48. 13	56. 13	21. 43	23. 2
14	Th.	30	23. 50	64. 25	72. 44	23. 57	24. 25
15	F.	1	6	81. 7	89. 28	24. 26	23. 59
16	Sa.	2	0. 54	97. 41	105. 44	23. 6	21. 48
17	Su.	3	1. 55	113. 32	121. 4	20. 9	18. 10
18	M.	4	2. 52	128. 20	135. 19	15. 57	13. 31
19	Tu.	5	3. 44	142. 3	148. 33	10. 57	8. 17
20	W.	6	4. 33	154. 52	161. 0	5. 33	2. 49 N
21	Th.	7	5. 19	167. 1	172. 56	0. 4 N	2. 38 S
22	F.	8	6. 2	178. 48	184. 37	5. 15 S	7. 47
23	Sa.	9	6. 45	190. 26	196. 17	10. 12	12. 29
24	Su.	10	7. 30	202. 10	208. 6	14. 38	16. 37
25	M.	11	8. 16	214. 7	220. 14	18. 24	20. 0
26	Tu.	12	9. 3	226. 25	232. 42	21. 22	22. 30
27	W.	13	9. 51	239. 4	245. 30	23. 24	24. 2
28	Th.	14	10. 40	251. 58	258. 28	24. 24	24. 29
29	F.	15	11. 30	264. 58	271. 28	24. 17	23. 49
30	Sa.	16	12. 19	277. 55	284. 19	23. 4	22. 4

VII.		J U N E 1787.				[67]	
Days of the Month.	Days of the Week.	Semidr. Δ at Noon. M. S.	Semidr. Δ at Mid-night. M. S.	Hor. Par. Δ at Noon. M. S.	Hor. Par. Δ at Midnight. M. S.	Report. Lo- ar. at Noon.	Report. Lo- ar. at Midn.
1	F.	14. 45	14. 45	54. 7	54. 8	5219	5218
2	Sa.	14. 46	14. 47	54. 11	54. 14	5214	5210
3	Su.	14. 48	14. 50	54. 20	54. 27	5202	5193
4	M.	14. 52	14. 55	54. 35	54. 46	5182	5167
5	Tu.	14. 59	15. 3	54. 58	55. 13	5152	5132
6	W.	15. 7	15. 12	55. 29	55. 47	5111	5087
7	Th.	15. 17	15. 23	56. 7	56. 28	5062	5035
8	F.	15. 29	15. 36	56. 51	57. 15	5005	4975
9	Sa.	15. 43	15. 50	57. 41	58. 8	4942	4908
10	Su.	15. 58	16. 5	58. 35	59. 2	4875	4842
11	M.	16. 12	16. 19	59. 28	59. 54	4810	4778
12	Tu.	16. 26	16. 32	60. 18	60. 39	4750	4724
13	W.	16. 37	16. 40	60. 57	61. 11	4703	4686
14	Th.	16. 43	16. 45	61. 21	61. 27	4675	4668
15	F.	16. 45	16. 44	61. 28	61. 24	4666	4671
16	Sa.	16. 41	16. 38	61. 15	61. 2	4682	4697
17	Su.	16. 33	16. 27	60. 44	60. 23	4718	4743
18	M.	16. 21	16. 14	59. 59	59. 33	4772	4804
19	Tu.	16. 6	15. 58	59. 5	58. 37	4838	4872
20	W.	15. 51	15. 43	59. 9	57. 41	4907	4942
21	Th.	15. 36	15. 28	57. 14	56. 48	4976	5009
22	F.	15. 21	15. 15	56. 23	56. 0	5041	5071
23	Sa.	15. 10	15. 5	55. 40	55. 21	5097	5122
24	Su.	15. 1	14. 57	55. 5	54. 51	5142	5161
25	M.	14. 54	14. 51	54. 39	54. 29	5177	5190
26	Tu.	14. 49	14. 47	54. 25	54. 15	5201	5209
27	W.	14. 46	14. 45	54. 11	54. 9	5214	5217
28	Th.	14. 45	14. 45	54. 8	54. 9	5218	5217
29	F.	14. 46	14. 47	54. 12	54. 16	5213	5207
30	Sa.	14. 49	14. 50	54. 21	54. 27	5201	5193

Distances of γ 's Center from Sun, and from Stars east of her.

Days.	Stars Names.	Noon. D. M. S.	3 Hours. D. M. S.	6 Hours. D. M. S.	9 Hours. D. M. S.	12 Hours. D. M. S.	15 Hours. D. M. S.	18 Hours. D. M. S.	21 Hours. D. M. S.
1	Fomal- haut.	74. 45. 46	73. 26. 16	72. 6. 55	70. 47. 41	69. 28. 36	68. 9. 41	66. 50. 57	65. 32. 25
2		64. 14. 4	62. 55. 57	61. 38. 6	60. 20. 31	59. 3. 13	57. 46. 12	56. 29. 31	55. 13. 10
3		53. 57. 11							
3	α Pegasi.	71. 19. 23	69. 53. 6	68. 26. 49	67. 0. 31	65. 34. 12	64. 7. 53	62. 41. 34	61. 15. 15
4		59. 48. 57	58. 22. 37	56. 56. 18	55. 30. 1	54. 3. 46	52. 37. 31	51. 11. 21	49. 45. 14
5		48. 19. 11	46. 53. 13	45. 27. 23	44. 1. 39	42. 36. 3			
5	α Arietis.	77. 53. 7	76. 20. 49	74. 48. 17	73. 15. 32	71. 42. 36	70. 9. 24	68. 35. 56	67. 2. 14
6		65. 28. 17	63. 54. 5	62. 19. 37	60. 44. 52	59. 9. 52	57. 34. 34	55. 58. 59	54. 23. 6
7		52. 46. 56	51. 10. 28	49. 33. 41	47. 56. 36	46. 19. 13			
8	The Sun.	119. 8. 15	117. 42. 45	116. 17. 0	114. 51. 1	113. 24. 48	111. 58. 20	110. 31. 36	109. 4. 37
9		107. 37. 22	106. 9. 49	104. 42. 4	103. 13. 56	101. 45. 36	100. 16. 55	98. 47. 54	97. 18. 35
10		95. 48. 56	94. 18. 58	92. 48. 39	91. 17. 59	89. 46. 59	88. 15. 37	86. 43. 52	85. 11. 46
11	The Sun.	83. 39. 16	82. 6. 24	80. 33. 9	78. 59. 31	77. 25. 29	75. 51. 2	74. 16. 11	72. 40. 56
12		71. 5. 16	69. 29. 12	67. 52. 43	66. 15. 49	64. 38. 30	63. 0. 45	61. 22. 35	59. 44. 1
12		58. 5. 1	56. 25. 36	54. 45. 47	53. 5. 34	51. 24. 56	49. 48. 54	48. 2. 29	46. 20. 41
		44. 38. 30	42. 55. 57	41. 13. 2	39. 29. 46				

IX. JUNE 1787. [69]

Stars Names.	Day.	Noon.	3 Hours.	6 Hours.	9 Hours.	12 Hours.	15 Hours.	18 Hours.	21 Hours.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Regulus.	16	34. 54. 44	33. 4. 32	31. 14. 51	29. 25. 39	42. 19. 16	40. 27. 37	38. 36. 19	36. 45. 21
	17	20. 28. 29				27. 36. 58	25. 48. 51	24. 1. 24	22. 14. 37
	18								
	19	74. 9. 27	72. 21. 17	70. 33. 34	68. 46. 16	66. 59. 24	65. 12. 58	63. 26. 59	61. 41. 26
Spica m	20	59. 56. 19	58. 11. 39	56. 27. 25	54. 43. 39	53. 0. 19	51. 17. 28	49. 35. 4	47. 53. 6
	21	46. 11. 36	44. 30. 32	42. 49. 54	41. 9. 43	39. 29. 58	37. 50. 40	36. 11. 47	34. 33. 21
	22	32. 55. 21	31. 17. 46	29. 40. 37	28. 3. 54	26. 27. 38	24. 51. 48	23. 16. 23	21. 41. 28
	23	20. 6. 58							
	24	65. 33. 0	63. 57. 52	62. 23. 2	60. 48. 31	59. 14. 19	57. 40. 25	56. 6. 47	54. 33. 27
Antares.	25	53. 0. 23	51. 27. 36	49. 55. 4	48. 22. 47	46. 50. 44	45. 18. 55	43. 47. 19	42. 15. 55
	26	40. 44. 45	39. 13. 47	37. 43. 0	36. 12. 24	34. 42. 0	33. 11. 46	31. 41. 41	30. 11. 45
	27	28. 41. 59							
a Aquila.	28	84. 10. 37	82. 50. 46	81. 31. 4	80. 11. 32	78. 52. 11	77. 33. 0	76. 14. 2	74. 55. 15
	29	73. 36. 40	72. 18. 17	71. 0. 9	69. 42. 15	68. 24. 35	67. 7. 11	65. 50. 3	64. 33. 13
	30	63. 16. 39							
Fomal- haut.	31	88. 4. 35	86. 44. 27	85. 24. 21	84. 4. 18	82. 44. 16	81. 24. 18	80. 4. 23	78. 44. 33
	32	77. 24. 47	76. 5. 6	74. 45. 31	73. 26. 2	72. 6. 39	70. 47. 23	69. 28. 16	68. 9. 16
	33	66. 50. 25							
a Pegasi.	34	85. 41. 18	84. 14. 59	82. 48. 37	81. 22. 13	79. 55. 46	78. 29. 17	77. 2. 46	75. 36. 12
	35	74. 9. 37	72. 43. 0	71. 16. 21	69. 49. 40	68. 22. 58	66. 56. 15	65. 29. 30	64. 2. 45
	36	62. 35. 58							

Distances of δ 's Center from Sun, and from Stars west of her.													
Days.	Stars Names.	Noon.	3 Hours.	6 Hours.	9 Hours.	12 Hours.	15 Hours.	18 Hours.	21 Hours.				
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	
1	α Spica μ	55. 38. 53	57. 7. 32	58. 36. 12	60. 4. 53	61. 33. 35	63. 2. 19	64. 31. 4	65. 59. 51				
2		67. 28. 40	68. 57. 30	70. 26. 23	71. 55. 19	73. 24. 17	74. 53. 18	76. 22. 24	77. 51. 33				
3		79. 20. 46											
3	α Antares.	33. 44. 29	35. 13. 43	36. 43. 3	38. 12. 27	39. 41. 57	41. 11. 32	42. 41. 14	44. 11. 2				
4		45. 40. 57	47. 10. 59	48. 41. 8	50. 11. 25	51. 41. 50	53. 12. 22	54. 43. 3	56. 13. 53				
5		57. 44. 52	59. 16. 0	60. 47. 19	62. 18. 48	63. 50. 28	65. 22. 19	66. 54. 23	68. 26. 38				
6		69. 59. 6	71. 31. 46	73. 4. 39	74. 37. 46	76. 11. 7	77. 44. 43	79. 18. 35	80. 52. 42				
7		82. 27. 5	84. 1. 44	85. 36. 40	87. 11. 54	88. 47. 24	90. 23. 13	91. 59. 20	93. 35. 47				
8		95. 12. 33											
9	α Aquila.	47. 18. 56	48. 35. 43	49. 53. 38	51. 12. 37	52. 32. 40	53. 53. 43	55. 15. 43	56. 38. 38				
10		58. 2. 29	59. 27. 8	60. 52. 35	62. 18. 49	63. 45. 49	65. 13. 33	66. 41. 57	68. 11. 3				
11		69. 40. 49	71. 11. 12	72. 42. 10	74. 13. 44	75. 45. 53	77. 18. 35	78. 51. 48	80. 25. 31				
11	α Pegasi.	81. 59. 45											
12		34. 13. 0	35. 49. 18	37. 26. 39	39. 5. 5	40. 44. 32	42. 24. 57	44. 6. 12	45. 48. 18				
13		47. 31. 12	49. 14. 47	50. 59. 0	52. 43. 51	54. 29. 20	56. 15. 21	58. 1. 51	59. 48. 51				
14		61. 36. 20	63. 24. 14	65. 12. 30	67. 1. 8	68. 50. 8	70. 39. 27	72. 29. 2	74. 18. 52				
		76. 8. 57											

XL

JUNE 1787

(71)

Days.	Stars Names.	Noon.	3 Hours.	6 Hours.	9 Hours.	12 Hours.	15 Hours.	18 Hours.	21 Hours.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
18		39.40.54	41.22.4	43.2.49	44.43.8	46.23.1	48.2.29	49.41.30	51.20.6
19		52.58.16	54.36.0	56.13.17	57.50.8	59.26.33	61.2.30	62.38.1	64.13.6
20		65.47.44	67.21.57	68.55.45	70.29.8	72.2.5	73.34.37	75.6.45	76.38.29
21	The Sun.	78.9.49	79.40.46	81.11.19	82.41.31	84.11.20	85.40.47	87.9.54	88.38.40
22		90.7.5	91.35.10	93.2.57	94.30.25	95.57.34	97.24.26	98.51.1	100.17.19
23		101.43.20	103.9.6	104.34.35	105.59.53	107.24.54	108.49.42	110.14.18	111.38.41
24		113.2.52	114.26.50	115.50.38	117.14.16	118.37.44	120.1.2		
22		34.32.39	36.6.57	37.40.59	39.14.47	40.48.19	42.21.37	43.54.40	45.27.29
23	Regulus.	47.0.3	48.32.23	50.4.29	51.36.23	53.8.3	54.39.31	56.10.48	57.41.53
24		59.12.47	60.43.30	62.14.2	63.44.25	65.14.38	66.44.42	68.14.38	69.44.25
25		71.14.5							
25		17.16.26	18.44.59	20.13.34	21.42.10	23.10.47	24.39.25	26.8.3	27.36.41
26		29.5.18	30.33.53	32.2.28	33.31.1	34.59.34	36.28.5	37.56.36	39.25.6
27	Spica 或	40.53.35	42.22.4	43.50.33	45.19.3	46.47.33	48.16.4	49.44.36	51.13.10
28		52.41.45	54.10.21	55.39.0	57.7.41	58.36.23	60.5.8	61.33.55	63.2.46
29		64.31.40							
29		18.56.56	20.25.33	21.54.16	23.23.6	24.52.3	26.21.6	27.50.15	29.19.30
30	Antares.	30.48.51	32.18.17	33.47.50	35.17.28	36.47.12	38.17.2	39.46.59	41.17.2
J. 1		42.47.11							

The Satellites of JUPITER are not visible this Month,
JUPITER being too near the SUN.

J U L Y 1787. [73]

Days of the Month.	Days of the Week.	Sundays, Holidays, &c.	Phases of the Moon.	
			D. H. M.	
			Last Quarter —	7. 8. 6
			New Moon —	14. 10. 58
			First Quarter —	21. 13. 8
			Full Moon —	29. 17. 7
			Other Phenomena.	
			D.H.M.	
1	Su.	4th Sunday after Trinity.	2.	☾ ♄ diff. Lat. 35'.
2	M.	Visit. of B.V. Mary.	3.	☾ ♄ d. Lat. 6'.
3	Tu.	Camb. Commencement.	7.	♄ ♄ diff. Lat.
4	W.	Transf. of St. Martin.		39'.
5	Th.		8.	9.53 ☾ ♄
6	F.	Camb. Term ends.	10.	17.50 ☾ ♄ Pleiadum.
7	Sa.		12.	14.27 ☾ 132 ☾
8	Su.	5th Sunday after Trinity.	15.	5 ☾ ♄
9	M.	Oxford Act.	16.	6.11 ☾ ☿ ☿
10	Tu.		16.	32 ☾ ☿ ☿
11	W.		19.	4 ☾ ♄ ☿
12	Th.		17.	☾ ♄ II diff. Lat.
13	F.			22'.
14	Sa.	Oxford Term ends.	18.	☾ ♄ II diff. Lat.
15	Su.	6th Sunday after Trinity.		22'.
16	M.	[Swithin.	14.39	☾ ☿ ☿
17	Tu.		20.	☾ ♄ ☿ diff. Lat.
18	W.			18'.
19	Th.		22.12.55	☉ enters ☿
20	F.	Margaret.	24. 2. 6	☾ ♄ ☿
21	Sa.		12.42	☾ ☿ ☿
22	Su.	7th Sunday after Trinity.	25.16.21	☾ ☿ Ophiu.
23	M.	[Magdalen.	18.15	☾ ☿ Ophiu.
24	Tu.		27.16. 2	☾ ☿ ☿
25	W.	St. James.	18.34	☾ ☿ ☿
26	Th.	St. Anne.	29.	☾ ♄ II diff. Lat.
27	F.			12'.
28	Sa.			
29	Su.	8th Sunday after Trinity.		
30	M.			
31	Tu.			

[74]

J U L Y 1787.

II.

Days of the Month.	Days of the Week.	Sun's Longitude.	Sun's Right Asc. in Time.	Sun's Declin. North.	Equat. of Time. Add.	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M. S.	S.
1	Su.	3. 9.26.56	6.41. 8,0	23. 7.47	3.20,0	
2	M.	3. 10.24. 7	6.45.16,0	23. 3.32	3.31,4	11,4
3	Tu.	3. 11.21.18	6.49.23,7	22.58.53	3.42,5	11,1
4	W.	3. 12.18.29	6.53.31,1	22.53.47	3.53,3	10,8
5	Th.	3. 13.15.40	6.57.38,2	22.48.19	4. 3,8	10,5
6	F.	3. 14.12.52	7. 1.45,0	22.42.27	4.14,0	10,2
7	Sa.	3. 15.10. 4	7. 5.51,4	22.36.11	4.23,9	9,9
8	Su.	3. 16. 7.17	7. 9.57,5	22.29.32	4.33,5	9,6
9	M.	3. 17. 4.30	7.14. 3,3	22.22.30	4.42,7	9,2
10	Tu.	3. 18. 1.44	7.18. 8,7	22.15. 4	4.51,5	8,8
11	W.	3. 18.58.59	7.22.13,6	22. 7.15	4.59,8	8,3
12	Th.	3. 19.56.14	7.26.18,1	21.59. 3	5. 7,7	7,9
13	F.	3. 20.53.30	7.30.22,2	21.50.29	5.15,2	7,5
14	Sa.	3. 21.50.46	7.34.25,8	21.41.32	5.22,3	7,1
15	Su.	3. 22.48. 2	7.38.29,0	21.32.13	5.28,9	6,6
16	M.	3. 23.45.19	7.42.31,7	21.22.32	5.35,0	6,1
17	Tu.	3. 24.42.37	7.46.33,9	21.12.29	5.40,6	5,6
18	W.	3. 25.39.55	7.50.35,5	21. 2. 5	5.45,7	5,1
19	Th.	3. 26.37.13	7.54.36,5	20.51.19	5.50,2	4,5
20	F.	3. 27.34.31	7.58.37,0	20.40.12	5.54,1	3,9
21	Sa.	3. 28.31.49	8. 2.36,9	20.28.44	5.57,4	3,3
22	Su.	3. 29.29. 8	8. 6.36,2	20.16.56	6. 0,1	2,7
23	M.	4. 0.26.27	8.10.34,9	20. 4.47	6. 2,2	2,1
24	Tu.	4. 1.23.46	8.14.33,0	19.52.18	6. 3,8	1,6
25	W.	4. 2.21. 6	8.18.30,5	19.39.29	6. 4,8	1,0
26	Th.	4. 3.18.26	8.22.27,4	19.26.21	6. 5,2	0,4
27	F.	4. 4.15.47	8.26.23,7	19.12.54	6. 4,9	0,3
28	Sa.	4. 5.13. 8	8.30.19,4	18.59. 8	6. 4,0	0,9
29	Su.	4. 6.10.30	8.34.14,5	18.45. 3	6. 2,5	1,5
30	M.	4. 7. 7.53	8.38. 9,0	18.30.39	6. 0,4	2,1
31	Tu.	4. 8. 5.17	8.42. 2,8	18.15.57	5.57,7	2,7

III. JULY 1787. [75.

Days	Semidia- meter of the Sun.	Time of D ^o passing the Meridian.	Hourly Motion of the Sun.	Logarithm of the Sun's Distance.	Place of the Moon's Node.
	M. S.	M. S.	M. S.		S. D. M.
1	15. 46, 9	1. 8, 6	2. 23, 0	0. 007221	9. 5. 3
7	15. 47, 0	1. 8, 4	2. 23, 0	0. 007200	9. 4. 44
13	15. 47, 2	1. 8, 0	2. 23, 1	0. 007105	9. 4. 25
19	15. 47, 6	1. 7, 6	2. 23, 2	0. 006914	9. 4. 6
25	15. 48, 2	1. 7, 1	2. 23, 4	0. 006641	9. 3. 47

Eclipses of the SATELLITES of J U P I T E R.

I. Satellite. Immersions.		II. Satellite. Immersions.		III. Satellite.	
Days	H. M. S.	Days	H. M. S.	Days	H. M. S.
2	9. 37. 22	3	12. 3. 50	7	13. 57. 8 I
4	4. 5. 30	7	1. 20. 33	7	16. 7. 30 E
5	22. 33. 56	*10	14. 37. 22	14	17. 55. 47 I
7	17. 2. 15	14	3. 54. 16	14	20. 7. 25 E
9	11. 30. 35	17	17. 11. 16	21	21. 54. 43 I
11	5. 58. 54	21	6. 28. 25	22	0. 7. 34 E
13	0. 27. 14	24	19. 45. 42	29	1. 54. 7 I
14	18. 55. 36	28	9. 3. 7	29	4. 8. 9 E
16	13. 24. 0	31	22. 20. 43		
18	7. 52. 25			IV. Satellite. Conj.	
20	2. 20. 51			3	13. 42 Inf.
21	20. 49. 18			12	1. 29 Sup.
23	15. 17. 47			20	10. 7 Inf.
25	9. 46. 18			28	21. 48 Sup.
27	4. 14. 51				
28	22. 43. 25				
30	17. 11. 59				

[76] JULY 1787. IV.

Days	Heliocen- tric Lon- gitude.	Heliocen- tric Lati- tude.	Geocen- tric Lon- gitude.	Geocen- tric La- titude.	Declina- tion.	Passage over Merid.
	S. D. M.	D. M.	S. D. M.	D. M.	D. M.	H. M.

MERCURY. Gr. Elon. 24^d.

1	5. 16. 7	6. 3 N	3. 25. 46	1. 51 N	22. 50 N	1. 12
4	5. 28. 31	5. 9	4. 1. 6	1. 43	21. 36	1. 22
7	6. 9. 51	4. 7	4. 6. 7	1. 29	20. 12	1. 30
10	6. 20. 19	3. 2	4. 10. 51	1. 10	18. 40	1. 37
13	7. 0. 5	1. 54	4. 15. 15	0. 48	17. 3	1. 42
16	7. 9. 18	0. 48 N	4. 19. 20	0. 21 N	15. 23	1. 45
19	7. 18. 7	0. 17 S	4. 23. 5	0. 8 S	13. 43	1. 47
22	7. 26. 38	1. 19	4. 26. 28	0. 40	12. 4	1. 47
25	8. 4. 58	2. 18	4. 29. 27	1. 15	10. 30	1. 46
28	8. 13. 13	3. 14	5. 1. 59	1. 51	9. 3	1. 43
31	8. 21. 27	4. 6	5. 3. 59	2. 28	7. 46	1. 37

VENUS.

1	0. 28. 53	2. 26 S	2. 10. 58	1. 13 S	20. 54 N	21. 58
7	1. 8. 29	2. 0	2. 18. 10	1. 0	21. 57	22. 4
13	1. 18. 6	1. 31	2. 25. 23	0. 44	22. 39	22. 11
19	1. 27. 44	1. 0	3. 2. 38	0. 28	22. 58	22. 18
25	2. 7. 23	0. 26	3. 9. 55	0. 12	22. 54	22. 26

MARS.

1	0. 5. 11	1. 15 S	1. 12. 37	1. 3 S	14. 37 N	20. 0
7	0. 8. 53	1. 10	1. 16. 52	1. 0	15. 56	19. 52
13	0. 12. 33	1. 4	1. 21. 5	0. 56	17. 9	19. 44
19	0. 16. 11	0. 59	1. 25. 15	0. 52	18. 15	19. 37
25	0. 19. 48	0. 53	1. 29. 21	0. 48	19. 15	19. 30

JUPITER.

1	2. 7. 13	0. 42 S	2. 12. 27	0. 35 S	21. 44 N	22. 0
7	2. 7. 44	0. 41	2. 13. 45	0. 35	21. 54	21. 41
13	2. 8. 16	0. 40	2. 15. 2	0. 35	22. 3	21. 22
19	2. 8. 47	0. 40	2. 16. 16	0. 35	22. 11	21. 3
25	2. 9. 19	0. 39	2. 17. 28	0. 34	22. 19	20. 44

SATURN.

1	10. 24. 4	1. 20 S	10. 28. 32	1. 26 S	13. 21 S	15. 21
7	10. 24. 15	1. 21	10. 28. 18	1. 27	13. 27	14. 55
13	10. 24. 26	1. 21	10. 28. 1	1. 28	13. 34	14. 30
19	10. 24. 38	1. 21	10. 27. 41	1. 29	13. 42	14. 5
25	10. 24. 49	1. 22	10. 27. 18	1. 30	13. 50	13. 40

V. JULY 1787. [77]

Days of the Month.	Days of the Week.	Moon's Longitude at Noon.	Moon's Longitude at Midnight.	Moon's Latitude at Noon.	Moon's Latitude at Midn.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
1	Su.	9. 19. 13. 55	9. 25. 14. 52	1. 16. 58 N	1. 48. 54 N
2	M.	10. 1. 17. 46	10. 7. 23. 1	2. 19. 48	2. 49. 17
3	Tu.	10. 13. 30. 52	10. 19. 41. 33	3. 17. 2	3. 42. 40
4	W.	10. 25. 55. 21	11. 2. 12. 34	4. 5. 54	4. 26. 23
5	Th.	11. 8. 33. 28	11. 14. 58. 19	4. 43. 47	4. 57. 51
6	F.	11. 21. 27. 24	11. 28. 0. 59	5. 8. 16	5. 14. 49
7	Sa.	0. 4. 39. 16	0. 11. 22. 30	5. 17. 16	5. 15. 26
8	Su.	0. 18. 10. 47	0. 25. 4. 14	5. 9. 11	4. 58. 27
9	M.	1. 2. 2. 53	1. 9. 6. 40	4. 43. 11	4. 23. 29
10	Tu.	1. 16. 15. 26	1. 23. 28. 57	3. 59. 28	3. 31. 25
11	W.	2. 0. 46. 48	2. 8. 8. 31	2. 59. 39	2. 24. 39
12	Th.	2. 15. 33. 25	2. 23. 0. 46	1. 46. 57	1. 7. 14 N
13	F.	3. 0. 29. 39	3. 7. 59. 8	0. 26. 15 N	0. 15. 14 S
14	Sa.	3. 15. 28. 7	3. 22. 55. 37	0. 56. 24 S	1. 36. 25
15	Su.	4. 0. 20. 32	4. 7. 41. 56	2. 14. 34	2. 50. 8
16	M.	4. 14. 58. 53	4. 22. 10. 43	3. 22. 32	3. 51. 19
17	Tu.	4. 29. 16. 44	5. 6. 16. 34	4. 16. 6	4. 36. 39
18	W.	5. 13. 9. 53	5. 19. 56. 37	4. 52. 51	5. 4. 39
19	Th.	5. 26. 36. 45	6. 3. 10. 32	5. 12. 7	5. 15. 20
20	F.	6. 9. 38. 11	6. 16. 0. 1	5. 14. 30	5. 9. 46
21	Sa.	6. 22. 16. 36	6. 28. 28. 19	5. 1. 23	4. 49. 37
22	Su.	7. 4. 35. 47	7. 10. 39. 35	4. 34. 37	4. 16. 40
23	M.	7. 16. 40. 17	7. 22. 38. 28	3. 56. 2	3. 33. 0
24	Tu.	7. 28. 34. 46	8. 4. 29. 40	3. 7. 47	2. 40. 41
25	W.	8. 10. 23. 50	8. 16. 17. 47	2. 11. 53	1. 41. 45
26	Th.	8. 22. 12. 0	8. 28. 6. 59	1. 10. 29	0. 38. 27 S
27	F.	9. 4. 3. 9	9. 10. 0. 53	0. 5. 53 S	0. 26. 50 N
28	Sa.	9. 16. 0. 31	9. 22. 2. 23	0. 59. 25 N	1. 31. 29
29	Su.	9. 28. 6. 41	10. 4. 13. 43	2. 2. 43	2. 32. 43
30	M.	10. 10. 23. 35	10. 16. 36. 28	3. 1. 9	3. 27. 37
31	Tu.	10. 22. 52. 29	10. 29. 11. 41	3. 51. 48	4. 13. 20

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JULY 1787.

VI.

Days of the Month.	Days of the Week.	D's Age.	D's Pass- age over Merid.	D's Right Ascens. at Noon.	D's Right Ascens. at Midn.	D's De- clination at Noon.	D's De- clination at Midn.
			H. M.	D. M.	D. M.	D. M.	D. M.
1	Su.	17	13. 6	290. 38	296. 51	20. 49 S	19. 19 S
2	M.	18	13. 52	303. 0	309. 3	17. 37	15. 43
3	Tu.	19	14. 37	315. 1	320. 55	13. 38	11. 24
4	W.	20	15. 21	326. 46	332. 36	9. 2	6. 33
5	Th.	21	16. 5	338. 25	344. 15	3. 59 S	1. 21 S
6	F.	22	16. 50	350. 8	356. 5	1. 20 N	4. 1 N
7	Sa.	23	17. 37	2. 10	8. 22	6. 42	9. 20
8	Su.	24	18. 27	14. 46	21. 21	11. 54	14. 20
9	M.	25	19. 22	28. 10	35. 14	16. 38	18. 42
10	Tu.	26	20. 21	42. 34	50. 8	20. 32	22. 5
11	W.	27	21. 23	57. 57	65. 57	23. 16	24. 4
12	Th.	28	22. 27	74. 6	82. 19	24. 27	24. 24
13	F.	29	23. 31	90. 32	98. 40	23. 54	22. 58
14	Sa.	1	0	106. 40	114. 28	21. 38	19. 56
15	Su.	2	0. 31	122. 2	129. 21	17. 55	15. 37
16	M.	3	1. 26	136. 26	143. 16	13. 8	10. 29
17	Tu.	4	2. 17	149. 54	156. 20	7. 44	4. 56 N
18	W.	5	3. 6	162. 37	168. 46	2. 7 N	0. 41 S
19	Th.	6	3. 52	174. 49	180. 49	3. 25 S	6. 5
20	F.	7	4. 37	186. 46	192. 43	8. 38	11. 4
21	Sa.	8	5. 22	198. 40	204. 40	13. 20	15. 27
22	Su.	9	6. 8	210. 42	216. 49	17. 22	19. 6
23	M.	10	6. 55	223. 0	229. 15	20. 36	21. 53
24	Tu.	11	7. 43	235. 35	241. 59	22. 55	23. 42
25	W.	12	8. 32	248. 26	254. 55	24. 13	24. 27
26	Th.	13	9. 22	261. 26	267. 56	24. 25	24. 6
27	F.	14	10. 11	274. 25	280. 52	23. 30	22. 38
28	Sa.	15	11. 0	287. 15	293. 33	21. 31	20. 9
29	Su.	16	11. 47	299. 47	305. 56	18. 34	16. 45
30	M.	17	12. 33	312. 0	318. 0	14. 45	12. 35
31	Tu.	18	13. 18	323. 56	329. 50	10. 15	7. 49

VII.		J U L Y 1787.				[79]	
Days of the Month.	Days of the Week.	Semidr. D at Noon. M. S.	Semidr. D at Midnight. M. S.	Hor. Par. D at Noon. M. S.	Hor. Par. D at Midnight. M. S.	Propor. Lo ear. at Noon.	Propor. Lo ear. at Midn.
1	Sa.	14. 52	14. 54	54. 33	54. 41	5185	5174
2	M.	14. 57	15. 0	54. 51	55. 3	5161	5145
3	Tu.	15. 4	15. 7	55. 16	55. 29	5128	5111
4	W.	15. 11	15. 15	55. 43	55. 59	5093	5072
5	Th.	15. 20	15. 25	56. 17	56. 36	5049	5025
6	F.	15. 31	15. 37	56. 56	57. 17	4999	4972
7	Sa.	15. 42	15. 48	57. 38	58. 0	4946	4918
8	Su.	15. 55	16. 1	58. 23	58. 46	4890	4861
9	M.	16. 7	16. 13	59. 8	59. 30	4834	4808
10	Tu.	16. 19	16. 24	59. 51	60. 10	4782	4759
11	W.	16. 28	16. 32	60. 27	60. 42	4739	4721
12	Th.	16. 35	16. 38	60. 53	61. 1	4708	4698
13	F.	16. 38	16. 38	61. 4	61. 3	4694	4696
14	Sa.	16. 37	16. 34	60. 58	60. 49	4702	4712
15	Su.	16. 31	16. 26	60. 35	60. 18	4729	4750
16	M.	16. 20	16. 14	59. 57	59. 34	4775	4802
17	Tu.	16. 7	16. 0	59. 9	58. 42	4833	4866
18	W.	15. 52	15. 45	58. 15	57. 47	4900	4934
19	Th.	15. 37	15. 30	57. 20	56. 53	4968	5003
20	F.	15. 23	15. 17	56. 28	56. 5	5035	5064
21	Sa.	15. 11	15. 6	55. 43	55. 24	5093	5118
22	Su.	15. 1	14. 57	55. 7	54. 52	5140	5159
23	M.	14. 54	14. 51	54. 40	54. 31	5175	5187
24	Tu.	14. 49	14. 48	54. 23	54. 18	5198	5205
25	W.	14. 47	14. 47	54. 15	54. 14	5209	5210
26	Th.	14. 47	14. 48	54. 16	54. 19	5207	5203
27	F.	14. 49	14. 51	54. 24	54. 30	5197	5189
28	Sa.	14. 53	14. 56	54. 38	54. 47	5178	5166
29	Su.	14. 58	15. 1	54. 57	55. 8	5153	5138
30	M.	15. 5	15. 8	55. 20	55. 33	5123	5106
31	Tu.	15. 12	15. 16	55. 46	56. 0	5080	5071

Distances of γ 's Center from Sun, and from Stars east of her.

Days.	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.
1		62.	35. 58	61.	9. 10	59. 42. 24		58. 15. 39		56. 48. 54		55. 22. 10		53. 55. 29		52. 28. 52	
2	α Pegasi.	51.	2. 18	49. 35. 48		48. 9. 24		46. 43. 7		45. 16. 57		43. 50. 58		42. 25. 11		40. 59. 36	
3		39.	34. 15														
3		80.	45. 16	79. 13. 13		77. 41. 0		76. 8. 37		74. 36. 5		73. 3. 23		71. 30. 30		69. 57. 27	
4	α Arietis.	68.	24. 13	66. 50. 49		65. 17. 14		63. 43. 28		62. 9. 30		60. 35. 21		59. 1. 0		57. 26. 27	
5		55.	51. 42	54. 16. 45		52. 41. 35		51. 6. 12		49. 30. 36							
5		75.	59. 52	74. 23. 18		72. 46. 29		71. 9. 24		69. 32. 4		67. 54. 28		66. 16. 36		64. 38. 27	
6	Aldebaran.	63.	0. 2	61. 21. 21		59. 42. 24		58. 3. 12		56. 23. 44		54. 44. 0		53. 4. 1		51. 23. 47	
7		49.	43. 18														
8		112.	39. 40	111. 9. 13		109. 38. 29		120. 8. 2		118. 38. 52		117. 9. 27		115. 39. 47		114. 9. 51	
9	The Sun,	100.	28. 5	98. 55. 18		97. 22. 13		108. 7. 28		106. 36. 11		105. 4. 36		103. 32. 43		102. 0. 33	
10		87.	57. 0	86. 21. 39		84. 45. 58		95. 48. 49		94. 15. 6		92. 41. 4		91. 6. 42		89. 32. 1	
11		75.	4. 44	73. 26. 40		71. 48. 16		83. 9. 57		81. 33. 35		79. 56. 53		78. 19. 50		76. 42. 27	
12		61.	50. 47	60. 10. 3		58. 28. 59		70. 9. 31		68. 30. 26		66. 51. 1		65. 11. 16		63. 31. 11	
13		48.	16. 20	46. 33. 15		44. 49. 55		56. 47. 37		55. 5. 56		53. 23. 57		51. 41. 41		49. 59. 9	
14		65.	49. 53	64. 1. 31		62. 13. 32		60. 25. 56		58. 38. 43		56. 51. 54		55. 5. 30		53. 19. 31	
15	Spica γ	51.	33. 56	49. 48. 47		48. 4. 4		46. 19. 47		44. 35. 56		42. 52. 32		41. 9. 35		39. 27. 5	

Day.	Stars Names.	Noon.	3 Hours.	6 Hours.	9 Hours.	12 Hours.	15 Hours.	18 Hours.	21 Hours.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
18	Spica ♀	37. 45. 3 24. 25. 28	36. 3. 28	34. 22. 21	32. 41. 42	31. 1. 29	29. 21. 46	27. 42. 31	26. 3. 46
19		69. 54. 22	68. 15. 49	66. 37. 39	64. 59. 53	63. 22. 31	61. 45. 34	60. 8. 57	58. 32. 42
20	Antares.	56. 56. 50	55. 21. 20	53. 46. 11	52. 11. 22	50. 36. 53	49. 2. 44	47. 28. 54	45. 55. 23
21		44. 22. 11	42. 49. 16	41. 16. 38	39. 44. 16	38. 12. 11	36. 40. 22	35. 8. 47	33. 37. 27
22		32. 6. 22							
22		87. 11. 37	85. 50. 34	84. 29. 45	83. 9. 8	81. 48. 44	80. 28. 34	79. 8. 37	77. 48. 54
23	α Aquilæ.	76. 29. 26	75. 10. 13	73. 51. 15	72. 32. 32	71. 14. 5	69. 55. 54	68. 38. 0	67. 20. 23
24		66. 3. 4							
24		91. 0. 48	89. 40. 28	88. 20. 11	86. 59. 57	85. 39. 46	84. 19. 39	82. 59. 37	81. 39. 39
25	Fomal-	80. 19. 44	78. 59. 53	77. 40. 6	76. 20. 24	75. 0. 48	73. 41. 19	72. 21. 56	71. 2. 39
26	haut.	69. 43. 29	68. 24. 26	67. 5. 31	65. 46. 46	64. 28. 10	63. 9. 45	61. 51. 32	60. 33. 32
27		59. 15. 46							
27		77. 18. 2	75. 51. 20	74. 24. 35	72. 57. 46	71. 30. 54	70. 3. 58	68. 36. 59	67. 9. 57
28		65. 42. 52	64. 15. 44	62. 48. 32	61. 21. 20	59. 54. 5	58. 26. 49	56. 59. 33	55. 32. 16
29	α Pegasi.	54. 5. 0	52. 37. 44	51. 10. 30	49. 43. 20	48. 16. 14	46. 49. 13	45. 22. 20	43. 55. 35
30		42. 29. 0							
30		83. 52. 28	82. 19. 52	80. 47. 4	79. 14. 6	77. 40. 58	76. 7. 40	74. 34. 13	73. 0. 35
31	α Arietis.	71. 26. 47	69. 52. 49	68. 18. 39	66. 44. 20	65. 9. 51	63. 35. 12	62. 0. 23	60. 25. 25
A. I.		58. 50. 18							

Distances of γ 's Center from Sun, and from Stars west of her.

Days.	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.
1		42.	47. 14	44.	17. 29	45.	47. 51	47.	18. 20	48.	48. 57	50.	19. 40	51.	50. 31	53.	21. 30
2		54.	52. 36	56.	23. 50	57.	55. 13	59.	26. 44	60.	58. 24	62.	30. 11	64.	2. 7	65.	34. 12
3	Antares.	67.	6. 27	68.	38. 52	70.	11. 26	71.	44. 10	73.	17. 4	74.	50. 9	76.	23. 24	77.	56. 50
4		79.	30. 28	81.	4. 17	82.	38. 18	84.	12. 31	85.	46. 56	87.	21. 34	88.	56. 25	90.	31. 30
5		92.	6. 48	93.	42. 20	95.	18. 5	96.	54. 4	98.	30. 17						
6		55.	13. 2	56.	34. 33	57.	56. 50	59.	19. 52	60.	43. 38	62.	8. 3	63.	33. 6	64.	58. 47
7	α Aquilæ.	66.	25. 4	67.	51. 56	69.	19. 21	70.	47. 18	72.	15. 46	73.	44. 44	75.	14. 11	76.	44. 6
8		78.	14. 29	79.	45. 17	81.	16. 30	82.	48. 7	84.	20. 7						
9		43.	0. 47	44.	39. 5	46.	18. 5	47.	57. 47	49.	38. 10	51.	19. 8	53.	0. 41	54.	42. 47
10	α Pegasi.	56.	25. 25	58.	8. 34	59.	52. 12	61.	36. 18	63.	20. 50	65.	5. 47	66.	51. 8	68.	36. 53
11		70.	23. 1							36.	35. 50	38.	10. 44	39.	46. 33	41.	23. 15
12		26.	49. 9	28.	37. 13	30.	25. 44	32.	14. 42	34.	4. 5	35.	53. 50	37.	43. 55	39.	34. 19
13	α Arictis.	41.	25. 0	43.	15. 56	45.	7. 6	46.	58. 29	48.	50. 2	50.	41. 44	52.	33. 35	54.	25. 33
		56.	17. 37														
17								39.	41. 9	41.	18. 3	42.	54. 31	44.	30. 34	46.	6. 11
18	The Sun.	47.	41. 23	49.	16. 9	50.	50. 30	52.	24. 25	53.	57. 55	55.	30. 59	57.	3. 39	58.	35. 54
19		60.	7. 44	61.	39. 10	63.	10. 12	64.	40. 50	66.	11. 5	67.	40. 57	69.	10. 26	70.	39. 33

XI.		JULY 1787.										[83]					
Days.	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.
20	The Sun.	72.	8. 19	73.	36. 43	75.	4. 46	76.	32. 29	77.	59. 51	79.	26. 54	80.	53. 39	82.	20. 5
21		83.	46. 13	85.	12. 4	86.	37. 38	88.	2. 56	89.	27. 58	90.	52. 45	92.	17. 18	93.	41. 36
22		95.	5. 41	96.	29. 33	97.	53. 13	99.	16. 42	100.	39. 59	102.	3. 6	103.	26. 3	104.	48. 50
23		106.	11. 29	107.	33. 59	108.	56. 22	110.	18. 37	111.	40. 45	113.	2. 47	114.	24. 44	115.	46. 36
24		117.	8. 23	118.	30. 5	119.	51. 44	121.	13. 19								
21	Regulus.	67.	49. 56	69.	20. 41	70.	51. 15	72.	21. 37	61.	44. 51	63.	16. 28	64.	47. 50	66.	18. 59
22		79.	50. 55							73.	51. 48	75.	21. 49	76.	51. 40	78.	21. 22
23																	
23	Spica ♋	25.	49. 16	27.	18. 21	28.	47. 22	30.	16. 20	31.	45. 14	33.	14. 5	34.	42. 53	36.	11. 37
24		37.	40. 18	39.	8. 55	40.	37. 29	42.	6. 2	43.	34. 34	45.	3. 6	46.	31. 37	48.	0. 9
25		49.	28. 41	50.	57. 13	52.	25. 46	53.	54. 20	55.	22. 56	56.	51. 34	58.	20. 14	59.	48. 57
26		61.	17. 43														
26	Antares.	15.	44. 10	17.	12. 29	18.	40. 57	20.	9. 35	21.	38. 21	23.	7. 14	24.	36. 15	26.	5. 23
27		27.	34. 39	29.	4. 2	30.	33. 32	32.	3. 10	33.	32. 56	35.	2. 50	36.	32. 52	38.	3. 2
28		39.	33. 21	41.	3. 48	42.	34. 24	44.	5. 9	45.	36. 2	47.	7. 4	48.	38. 15	50.	9. 36
29		51.	41. 6	53.	12. 45	54.	44. 34	56.	16. 33	57.	48. 41	59.	20. 59	60.	53. 27	62.	26. 5
30		63.	58. 53	65.	31. 51	67.	5. 0	68.	38. 19	70.	11. 49	71.	45. 29	73.	19. 20	74.	53. 22
31		76.	27. 35	78.	1. 58	79.	36. 32	81.	11. 17	82.	46. 13	84.	21. 18	85.	56. 36	87.	32. 5
A. 1		89.	7. 45														

Configurations of the SATELLITES of JUPITER at
Three o'Clock in the Morning.

1	4	2	⊙	1	3
2	1.0	4	3	⊙	
3		3	4	⊙	2
4	2 4.0		3	⊙	1
5		2	1	⊙	3 4
6				⊙	2 3 4
7			1	⊙	2 3 4
8	3		2	⊙	1 4
9	1.0		3	⊙	2 4
10		3		⊙	1 2 4
11	2		3	⊙	1 4
12		2	1	⊙	4 3
13			4	⊙	2 1 3
14		4		⊙	1 2 3
15	4		2	⊙	1 3
16	4		3	⊙	2 1
17	4		3	⊙	2 1
18	4		3	⊙	2 1
19	3.0		2	⊙	1
20	2.0		4	⊙	1 3
21			1	⊙	4 2 3
22			2	⊙	1 3 4
23			2 3	⊙	1 4
24		3		⊙	1 2 4
25	1.0		3	⊙	2 4
26	3.0		2	⊙	1 4
27			2	⊙	1 3 4
28			1	⊙	2 4 3
29			2	⊙	4 1 3
30			2 4	⊙	
31		4 3		⊙	1 2

I. AUGUST 1787. [85]

Days of the Month.	Days of the Week.	Sundays, Holidays, &c.	Phases of the Moon.
			D.H.M.
			Last Quarter — 6. 2. 36
			New Moon — 12. 19. 6
			First Quarter — 20. 5. 26
			Full Moon — 28. 6. 19
			Other Phenomena.
			D.H.M.
1	W.	Lammas-Day,	4.15.40 ☾ ♄
2	Th.		7. ☿ Stationary.
3	F.		0.57 ☾ ♄ Pleiadum.
4	Sa.		8.23.0 ☾ 132 ♄
5	Su.	9th Sunday after Trinity.	9. 8.49 ☾ ♄ II
6	M.	Transfig. of our Lord.	11.53 ☾ ♄ II
7	Tu.	Name of Jesus.	10. 9.38 ☾ ♄ II
8	W.		13.18.40 ☾ ♄
9	Th.		15. ☿ ♄ diff. Lat. 36'.
10	F.	St. Lawrence.	☿ ♄ diff. Lat. 31'.
11	Sa.		0.15 ☾ e ♄
12	Su.	10th Sunday after Trinity.	16. ☿ ♄ diff. Lat. 45'.
13	M.	[Pr. of Wales born.	20. 9.38 ☾ ♄ III
14	Tu.		20.12 ☾ ♄ III
15	W.		21.23.48 ☾ ♄ Ophiuchi.
16	Th.	Pr. Frederick born.	22. 1.42 ☾ ♄ Ophiuchi.
17	F.		19.17 ☾ enters ♄
18	Sa.		23.23.34 ☾ o ♄
19	Su.	11th Sunday after Trinity.	24. 2. 6 ☾ ♄ ♄
20	M.	Pr. W. Henry born.	31. ☿ Stationary.
21	Tu.		21.17 ☾ ♄
22	W.		
23	Th.		
24	F.	St. Bartholomew.	
25	Sa.		
26	Su.	12th Sunday after Trinity.	
27	M.		
28	Tu.	St. Augustine.	
29	W.	Beheading of St. John	
30	Th.	[Baptist.	
31	F.		

Days of the Month.	Days of the Week.	Sun's Longitude.	Sun's Right Asc. in Time.	Sun's Declin. North.	Equat. of Time. Add.	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M. S.	S.
1	W.	4. 9. 2.42	8.45.56,1	18. 0.57	5.54,4	3,9
2	Th.	4. 10. 0. 8	8.49.48,8	17.45.39	5.50,5	4,4
3	F.	4. 10.57.35	8.53.40,9	17.30. 4	5.46,1	5,0
4	Sa.	4. 11.55. 4	8.57.32,4	17.14.11	5.41,1	5,6
5	Su.	4. 12.52.34	9. 1.23,3	16.58. 2	5.35,5	6,2
6	M.	4. 13.50. 5	9. 5.13,7	16.41.36	5.29,3	6,8
7	Tu.	4. 14.47.38	9. 9. 3,5	16.24.54	5.22,5	7,3
8	W.	4. 15.45.12	9.12.52,7	16. 7.56	5.15,2	7,8
9	Th.	4. 16.42.48	9.16.41,4	15.50.42	5. 7,4	8,4
10	F.	4. 17.40.24	9.20.29,5	15.33.13	4.59,0	9,0
11	Sa.	4. 18.38. 3	9.24.17,1	15.15.29	4.50,0	9,5
12	Su.	4. 19.35.43	9.28. 4,1	14.57.30	4.40,5	10,1
13	M.	4. 20.33.24	9.31.50,5	14.39.17	4.30,4	10,6
14	Tu.	4. 21.31. 7	9.35.36,5	14.20.50	4.19,8	11,2
15	W.	4. 22.28.50	9.39.21,8	14. 2. 9	4. 8,6	11,7
16	Th.	4. 23.26.36	9.43. 6,7	13.43.14	3.56,9	12,2
17	F.	4. 24.24.22	9.46.50,9	13.24. 6	3.44,7	12,7
18	Sa.	4. 25.22. 9	9.50.34,7	13. 4.46	3.32,0	13,3
19	Su.	4. 26.19.57	9.54.18,0	12.45.13	3.18,7	13,8
20	M.	4. 27.17.47	9.58. 0,7	12.25.28	3. 4,9	14,3
21	Tu.	4. 28.15.37	10. 1.43,0	12. 5.32	2.50,6	14,7
22	W.	4. 29.13.29	10. 5.24,7	11.45.24	2.35,9	15,2
23	Th.	5. 0.11.22	10. 9. 6,0	11.25. 5	2.20,7	15,7
24	F.	5. 1. 9.16	10.12.46,9	11. 4.35	2. 5,0	16,1
25	Sa.	5. 2. 7.11	10.16.27,3	10.43.55	1.48,9	16,5
26	Su.	5. 3. 5. 8	10.20. 7,3	10.23. 5	1.32,4	16,9
27	M.	5. 4. 3. 6	10.23.46,9	10. 2. 5	1.15,5	17,3
28	Tu.	5. 5. 1. 5	10.27.26,1	9.40.56	0.58,2	17,6
29	W.	5. 5.59. 6	10.31. 5,0	9.19.37	0.40,6	18,0
30	Th.	5. 6.57.10	10.34.43,5	8.58. 8	0.22,6	18,3
31	F.	5. 7.55.14	10.38.21,7	8.36.31	0. 4,3	

III. AUGUST 1787. [87]

Days of the Month.	Semidiameter of the Sun.	Time of D ^o passing the Meridian.	Hourly Motion of the Sun.	Logarithm of the Sun's Distance.	Place of the Moon's Node.
	M. S.	M. S.	M. S.		S. D. M.
1	15. 49. 0	1. 6. 5	2. 23. 6	0. 006252	9. 3. 25
7	15. 49. 9	1. 6. 0	2. 23. 9	0. 005870	9. 3. 6
13	15. 50. 9	1. 5. 5	2. 24. 3	0. 005423	9. 2. 47
19	15. 52. 1	1. 5. 1	2. 24. 6	0. 004894	9. 2. 28
25	15. 53. 3	1. 4. 7	2. 24. 9	0. 004306	9. 2. 9

ECLIPSES of the SATELLITES of JUPITER.

I. Satellite. Immerfions.		II. Satellite.		III. Satellite.	
Days	H. M. S.	Days	H. M. S.	Days	H. M. S.
1	11. 40. 37	4	11. 38. 21 I	5	5. 53. 55 I
3	6. 9. 16	8	0. 56. 18 I	5	8. 9. 17 E
5	0. 37. 54	*11	14. 14. 18 I	12	9. 54. 7 I
6	19. 6. 36	15	3. 32. 28 I	12	12. 10. 41 E
*8	13. 35. 19	15	6. 8. 30 E	*19	13. 54. 43 I
10	8. 4. 1	18	16. 50. 47 I	19	16. 12. 35 E
12	2. 32. 44	18	19. 26. 55 E	26	17. 55. 36 I
13	21. 1. 31	22	6. 9. 14 I	26	20. 14. 40 E
*15	15. 30. 19	22	8. 45. 28 E	IV. Satellite. Conj.	
17	9. 59. 9	25	19. 27. 46 I		
19	4. 28. 1	25	22. 4. 6 E		
20	22. 56. 52	29	8. 46. 29 I		
22	17. 25. 45	29	11. 22. 55 E		
24	11. 54. 41			6	6. 11 Inf.
26	6. 23. 35			14	17. 38 Sup.
28	0. 52. 30			23	1. 45 Inf.
29	19. 21. 29			*31	12. 57 Sup.
*31	13. 50. 26				

Days.	Heliocen- tric Lon- gitude.	Heliocen- tric Lati- tude.	Geocen- tric Lon- gitude.	Geocen- tric Lati- tude.	Declina- tions	Passage over Merid.
	S. D. M.	D. M.	S. D. M.	D. M.	D. M.	H. M.

MERCURY. Inf. δ 21^d. 4^h.

1	8. 24. 13	4. 22 S	5. 4. 31	2. 40 S	7. 23 N	1. 36
4	9. 2. 37	5. 7	5. 5. 42	3. 16	6. 24	1. 27
7	9. 11. 15	5. 46	5. 6. 10	3. 49	5. 43	1. 17
10	9. 20. 12	6. 19	5. 5. 51	4. 17	5. 24	1. 4
13	9. 29. 35	6. 43	5. 4. 42	4. 36	5. 31	0. 48
16	10. 9. 32	6. 57	5. 2. 49	4. 43	6. 4	0. 29
19	10. 20. 12	6. 59	5. 0. 20	4. 35	7. 5	0. 9
22	11. 1. 44	6. 44	4. 27. 41	4. 9	8. 24	23. 42
25	11. 14. 18	6. 10	4. 25. 18	3. 29	9. 50	23. 24
28	11. 28. 3	5. 12	4. 23. 39	2. 37	11. 11	23. 9
31	0. 13. 7	3. 48	4. 23. 6	1. 41	12. 14	22. 58

VENUS.

1	2. 18. 40	0. 14 N	3. 18. 26	0. 6 N	22. 18 N	22. 35
7	2. 28. 21	0. 48	3. 25. 44	0. 22	21. 23	22. 43
13	3. 8. 4	1. 20	4. 3. 5	0. 36	20. 4	22. 51
19	3. 17. 47	1. 51	4. 10. 27	0. 49	18. 25	22. 59
25	3. 27. 32	2. 18	4. 17. 50	1. 0	16. 28	23. 7

MARS.

1	0. 23. 59	0. 45 S	2. 4. 3	0. 42 S	20. 17 N	19. 22
7	0. 27. 31	0. 39	2. 8. 1	0. 37	21. 3	19. 16
13	1. 1. 2	0. 32	2. 11. 55	0. 32	21. 43	19. 9
19	1. 4. 31	0. 26	2. 15. 44	0. 26	22. 16	19. 3
25	1. 7. 58	0. 19	2. 19. 28	0. 20	22. 43	18. 57

JUPITER.

1	2. 9. 56	0. 38 S	2. 18. 48	0. 34 S	22. 25 N	20. 23
7	2. 10. 27	0. 38	2. 19. 53	0. 34	22. 31	20. 4
13	2. 10. 59	0. 37	2. 20. 55	0. 34	22. 35	19. 46
19	2. 11. 30	0. 36	2. 21. 53	0. 34	22. 39	19. 28
25	2. 12. 2	0. 36	2. 22. 46	0. 34	22. 42	19. 10

SATURN. δ 18^d. 5^h.

1	10. 25. 2	1. 22 S	10. 26. 50	1. 31 S	14. 1 S	13. 10
7	10. 25. 14	1. 23	10. 26. 25	1. 32	14. 10	12. 45
13	10. 25. 25	1. 23	10. 25. 58	1. 33	14. 20	12. 21
19	10. 25. 36	1. 24	10. 25. 31	1. 33	14. 30	11. 57
25	10. 25. 48	1. 24	10. 25. 4	1. 34	14. 39	11. 33

V. AUGUST 1787. [89]

Days of the Month.	Days of the Week.	Moon's Longitude at Noon.	Moon's Longitude at Midnight.	Moon's Latitude at Noon.	Moon's Latitude at Midn.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
1	W.	11. 5. 34. 11	11. 12. 0. 1	4. 31. 52 N	4. 47. 11 N
2	Th.	11. 18. 29. 12	11. 25. 1. 48	4. 58. 55	5. 6. 52
3	F.	0. 1. 37. 47	0. 8. 17. 13	5. 10. 49	5. 10. 38
4	Sa.	0. 15. 0. 3	0. 21. 46. 19	5. 6. 12	4. 57. 29
5	Su.	0. 28. 35. 59	1. 5. 29. 3	4. 44. 30	4. 27. 19
6	M.	1. 12. 25. 28	1. 19. 25. 12	4. 6. 5	3. 41. 1
7	Tu.	1. 26. 28. 9	2. 3. 34. 12	3. 12. 24	2. 40. 38
8	W.	2. 10. 43. 8	2. 17. 54. 46	2. 6. 8	1. 29. 26
9	Th.	2. 25. 8. 44	3. 2. 24. 38	0. 51. 9 N	0. 11. 52 N
10	F.	3. 9. 41. 57	3. 17. 0. 7	0. 27. 43 S	1. 6. 53 S
11	Sa.	3. 24. 18. 23	4. 1. 36. 4	1. 44. 52	2. 21. 5
12	Su.	4. 8. 52. 17	4. 16. 6. 14	2. 54. 50	3. 25. 31
13	M.	4. 23. 17. 9	5. 0. 24. 14	3. 52. 42	4. 15. 58
14	Tu.	5. 7. 26. 50	5. 14. 24. 21	4. 35. 4	4. 49. 49
15	W.	5. 21. 16. 19	5. 28. 2. 28	5. 0. 9	5. 6. 7
16	Th.	6. 4. 42. 35	6. 11. 16. 43	5. 7. 48	5. 5. 22
17	F.	6. 17. 44. 55	6. 24. 7. 26	4. 59. 2	4. 49. 3
18	Sa.	7. 0. 24. 36	7. 6. 36. 49	4. 35. 41	4. 19. 15
19	Su.	7. 12. 44. 37	7. 18. 48. 34	3. 59. 59	3. 38. 13
20	M.	7. 24. 49. 12	8. 0. 47. 14	3. 14. 12	2. 48. 14
21	Tu.	8. 6. 43. 16	8. 12. 38. 3	2. 20. 35	1. 51. 32
22	W.	8. 18. 32. 6	8. 24. 26. 14	1. 21. 21	0. 50. 18 S
23	Th.	9. 0. 20. 59	9. 6. 17. 0	0. 18. 41 S	0. 13. 13 N
24	F.	9. 12. 14. 50	9. 18. 14. 59	0. 45. 7 N	1. 16. 40
25	Sa.	9. 24. 17. 55	10. 0. 24. 3	1. 47. 34	2. 17. 27
26	Su.	10. 6. 33. 41	10. 12. 47. 5	2. 46. 0	3. 12. 47
27	M.	10. 19. 4. 25	10. 25. 25. 50	3. 37. 30	3. 59. 44
28	Tu.	11. 1. 51. 17	11. 8. 20. 48	4. 19. 9	4. 35. 25
29	W.	11. 14. 54. 12	11. 21. 31. 23	4. 48. 12	4. 57. 14
30	Th.	11. 28. 12. 3	0. 4. 56. 3	5. 2. 18	5. 3. 14
31	F.	0. 11. 43. 1	0. 18. 32. 42	4. 59. 53	4. 52. 16

[90] AUGUST 1787. VI.							
Dys of the Month.	Dys of the Week.	D's Age.	D's Pass- age over Merid.	D's Right Ascen. at Noon.	D's Right Asc. at Midn.	D's De- clination at Noon.	D's De- clination at Midn.
			H. M.	D. M.	D. M.	D. M.	D. M.
1	W.	19	14. 1	335. 43	341. 35	5. 16 S	2. 39 S
2	Th.	20	14. 48	347. 28	353. 25	0. 1 N	2. 43 N
3	F.	21	15. 34	359. 26	5. 33	5. 24	8. 2
4	Sa.	22	16. 22	11. 48	18. 13	10. 37	13. 5
5	Su.	23	17. 15	24. 49	31. 37	15. 25	17. 34
6	M.	24	18. 11	38. 39	45. 53	19. 29	21. 9
7	Tu.	25	19. 11	53. 21	61. 0	22. 30	23. 31
8	W.	26	20. 13	63. 48	76. 43	24. 10	24. 24
9	Th.	27	21. 15	84. 41	92. 38	24. 14	23. 38
10	F.	28	22. 15	100. 31	108. 17	22. 39	21. 17
11	Sa.	29	23. 12	115. 53	123. 18	19. 34	17. 32
12	Su.	1	♂	130. 31	137. 31	15. 15	12. 46
13	M.	2	0. 6	144. 20	150. 58	10. 7	7. 21
14	Tu.	3	0. 56	157. 26	163. 47	4. 32 N	1. 41 N
15	W.	4	1. 44	170. 1	176. 10	1. 8 S	3. 54 S
16	Th.	5	2. 31	182. 16	188. 21	6. 35	9. 9
17	F.	6	3. 17	194. 25	200. 30	11. 35	13. 50
18	Sa.	7	4. 4	206. 37	212. 47	15. 56	17. 49
19	Su.	8	4. 51	219. 0	225. 17	19. 29	20. 56
20	M.	9	5. 40	231. 37	238. 0	22. 8	23. 5
21	Tu.	10	6. 29	244. 26	250. 54	23. 46	24. 11
22	W.	11	7. 19	257. 24	263. 54	24. 19	24. 11
23	Th.	12	8. 8	270. 23	276. 50	23. 47	23. 6
24	F.	13	8. 58	283. 14	289. 35	22. 9	20. 57
25	Sa.	14	9. 46	295. 52	302. 5	19. 31	17. 51
26	Su.	15	10. 33	308. 14	314. 19	15. 59	13. 55
27	M.	16	11. 18	320. 21	326. 20	11. 41	9. 18
28	Tu.	17	12. 4	332. 19	338. 16	6. 48	4. 11 S
29	W.	18	12. 50	344. 15	350. 16	1. 31 S	1. 11 N
30	Tu.	19	13. 37	356. 21	2. 31	3. 54 N	6. 36
31	F.	20	14. 26	8. 48	15. 13	9. 14	11. 46

VII.		AUGUST 1787.				191	
Days of the Month.	Days of the Week.	Semid ^r . » at Noon.	Semid ^r . » at Midnight.	Hor. Par. » at Noon.	Hor. Par. » at Midnight.	Proport. Lo- par. at Noon.	Proport. Lo- par. at Midn.
		M. S.	M. S.	M. S.	M. S.		
1	W.	15. 20	15. 24	56. 15	56. 31	5051	5031
2	Th.	15. 28	15. 33	56. 46	57. 2	5012	4991
3	F.	15. 37	15. 41	57. 18	57. 34	4971	4951
4	Sa.	15. 46	15. 50	57. 51	58. 7	4930	4910
5	Su.	15. 55	15. 59	58. 24	58. 40	4889	4869
6	M.	16. 3	16. 8	58. 56	59. 12	4849	4830
7	Tu.	16. 12	16. 16	59. 26	59. 40	4812	4795
8	W.	16. 19	16. 22	59. 52	60. 2	4781	4769
9	Th.	16. 24	16. 25	60. 11	60. 16	4758	4752
10	F.	16. 26	16. 26	60. 19	60. 19	4748	4748
11	Sa.	16. 25	16. 23	60. 16	60. 9	4752	4760
12	Su.	16. 21	16. 17	59. 59	59. 46	4772	4788
13	M.	16. 13	16. 8	59. 30	59. 11	4808	4831
14	Tu.	16. 2	15. 56	58. 50	58. 28	4856	4883
15	W.	15. 49	15. 43	58. 4	57. 39	4913	4945
16	Th.	15. 36	15. 29	57. 15	56. 50	4975	5006
17	F.	15. 23	15. 17	56. 27	56. 5	5036	5064
18	Sa.	15. 11	15. 6	55. 44	55. 26	5091	5115
19	Su.	15. 2	14. 58	55. 9	54. 55	5137	5155
20	M.	14. 55	14. 52	54. 43	54. 34	5171	5183
21	Tu.	14. 50	14. 49	54. 27	54. 23	5193	5198
22	W.	14. 49	14. 49	54. 21	54. 22	5201	5199
23	Th.	14. 50	14. 51	54. 25	54. 31	5195	5187
24	F.	14. 53	14. 56	54. 38	54. 48	5178	5165
25	Sa.	14. 59	15. 2	54. 58	55. 10	5152	5136
26	Su.	15. 6	15. 10	55. 23	55. 39	5119	5098
27	M.	15. 14	15. 19	55. 55	56. 11	5077	5056
28	Tu.	15. 23	15. 28	56. 27	56. 44	5036	5014
29	W.	15. 32	15. 36	57. 0	57. 16	4994	4973
30	Th.	15. 40	15. 44	57. 31	57. 46	4955	4936
31	F.	15. 48	15. 52	58. 0	58. 13	4918	4902

IX. AUGUST 1787. [93]									
Days.	Stars Names.	Noon. D. M. S.	3 Hours. D. M. S.	6 Hours. D. M. S.	9 Hours. D. M. S.	12 Hours. D. M. S.	15 Hours. D. M. S.	18 Hours. D. M. S.	21 Hours. D. M. S.
18	Antares.	36. 16. 34	34. 43. 30	33. 10. 42	31. 38. 13	30. 6. 1			
18									
19	α Aquilæ.	79. 52. 53	78. 31. 59	77. 11. 23	75. 51. 5	85. 19. 18	83. 57. 17	82. 35. 32	81. 14. 4
20		69. 14. 17	67. 55. 54	66. 37. 52	65. 20. 12	74. 31. 5	73. 11. 24	71. 52. 2	70. 33. 0
21		58. 57. 40				64. 2. 53	62. 45. 59	61. 29. 29	60. 13. 22
21									
22	Fomal- haut.	83. 42. 27	82. 22. 9	81. 1. 59	79. 41. 56	78. 22. 0	77. 2. 11	75. 42. 30	74. 22. 57
22		73. 3. 31	71. 44. 11	70. 25. 0	69. 5. 57	67. 47. 3	65. 28. 18	65. 9. 45	63. 51. 23
23		62. 33. 12	61. 15. 12	59. 57. 27	58. 39. 58	57. 22. 44	56. 5. 47	54. 43. 9	53. 32. 51
24		52. 16. 55							
24									
25	γ Pegasi.	69. 19. 8	67. 52. 17	66. 25. 23	64. 58. 23	63. 31. 19	62. 4. 11	60. 36. 59	59. 9. 45
25		57. 42. 27	56. 15. 6	54. 47. 43	53. 20. 19	51. 52. 54	50. 25. 27	48. 58. 4	47. 30. 43
26		46. 3. 26	44. 36. 15	43. 9. 11	41. 42. 15	40. 15. 29			
26									
27	α Arietis.	75. 13. 54	73. 39. 26	72. 4. 44	70. 29. 50	81. 29. 30	79. 55. 56	78. 22. 9	76. 48. 8
28		62. 32. 0	60. 55. 46	59. 19. 21	57. 42. 42	68. 54. 42	67. 19. 21	65. 43. 47	64. 8. 0
29		49. 36. 34	47. 58. 46	46. 20. 48	44. 42. 41	56. 5. 52	54. 28. 49	52. 51. 35	51. 14. 10
30		36. 29. 59				43. 4. 24	41. 25. 58	39. 47. 26	38. 8. 46
30									
31	Aldeba- ran.	69. 19. 51	67. 40. 34	66. 1. 8	64. 21. 32	62. 41. 45	61. 1. 51	59. 21. 48	57. 41. 37
31		56. 1. 18	54. 20. 51	52. 40. 18	50. 59. 39	49. 18. 54	47. 38. 4	45. 57. 11	44. 16. 16
S 1		42. 35. 16							

[94.] A U G U S T 1787. X.										
Distances of ☽'s Center from Sun, and from Stars west of her.										
Stars Names.	Days.	Noon. D. M. S.	3 Hours. D. M. S.	6 Hours. D. M. S.	9 Hours. D. M. S.	12 Hours. D. M. S.	15 Hours. D. M. S.	18 Hours. D. M. S.	21 Hours. D. M. S.	
Antares.	1	89. 7. 45	90. 43. 37	92. 19. 40	93. 55. 55	95. 32. 21	97. 8. 58	98. 45. 48	100. 22. 49	
	2	102. 0. 2								
α Aquilæ.	2	52. 49. 3	54. 9. 24	55. 30. 31	56. 52. 23	58. 14. 57	59. 38. 13	61. 2. 5	62. 26. 34	
	3	63. 51. 39	65. 17. 15	66. 43. 22	68. 9. 58	69. 37. 5	71. 4. 37	72. 32. 33	74. 0. 53	
	4	75. 29. 36	76. 58. 43	78. 28. 11	79. 57. 58	81. 28. 2				
	4					33. 40. 41	35. 12. 11	36. 44. 36	38. 17. 55	
α Pegasi.	5	39. 52. 2	41. 26. 57	43. 2. 33	44. 38. 50	46. 15. 46	47. 53. 14	49. 31. 13	51. 9. 43	
	6	52. 48. 44	54. 28. 11	56. 8. 2	57. 48. 19	59. 29. 1	61. 10. 5	62. 51. 31	64. 33. 17	
	7	66. 15. 22								
	7	22. 38. 28	24. 21. 48	26. 5. 40	27. 50. 1	29. 34. 51	31. 20. 8	33. 5. 46	34. 51. 48	
α Arietis.	8	36. 38. 11	38. 24. 49	40. 11. 44	41. 58. 56	43. 46. 24	45. 34. 3	47. 21. 56	49. 10. 1	
	9	50. 58. 16								
	9	19. 21. 43	21. 2. 15	22. 43. 55	24. 26. 38	26. 10. 15	27. 54. 47	29. 39. 54	31. 25. 38	
Aldeba- ran.	10	33. 11. 59	34. 58. 34	36. 45. 27	38. 32. 37	40. 20. 5	42. 7. 40	43. 55. 23	45. 43. 12	
	11	47. 31. 9	49. 19. 10	51. 7. 10	52. 55. 10	54. 43. 12				
	16	41. 31. 38	43. 2. 40	44. 33. 22	46. 3. 43	47. 33. 43	49. 3. 20	50. 32. 38	52. 1. 35	
	17	53. 30. 13	54. 58. 29	56. 26. 27	57. 54. 5	59. 21. 24	60. 48. 24	62. 15. 6	63. 41. 30	
The Sun.	18	65. 7. 36	66. 33. 24	67. 58. 56	69. 24. 11	70. 49. 11	72. 13. 55	73. 38. 24	75. 2. 40	
	19	76. 26. 41	77. 50. 29	79. 14. 5	80. 37. 28	82. 0. 40	83. 23. 40	84. 46. 29	86. 9. 9	

XI.		AUGUST 1787.										[95]
Days.	Stars Names.	Noon.	3 Hours.	6 Hours.	9 Hours.	12 Hours.	15 Hours.	18 Hours.	21 Hours.			
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	
20	The Sun .	87. 31. 39	88. 54. 0	90. 16. 14	91. 38. 20	93. 0. 19	94. 22. 11	95. 43. 57	97. 5. 38			
21		98. 27. 14	99. 48. 46	101. 10. 15	102. 31. 40	103. 53. 3	105. 14. 22	106. 35. 41	107. 56. 59			
22		103. 18. 17	110. 39. 36	112. 0. 55	113. 22. 17	114. 43. 39	116. 5. 3	117. 26. 31	118. 48. 2			
23		120. 9. 35										
20	Spica ♏	33. 55. 16	35. 24. 43	36. 54. 5	38. 23. 21	39. 52. 31	41. 21. 35	42. 50. 34	44. 19. 29			
21		45. 48. 20	47. 17. 7	48. 45. 51	50. 14. 33	51. 43. 14	53. 11. 52	54. 40. 29	56. 9. 7			
22		57. 37. 45	59. 6. 24	60. 35. 6	62. 3. 49	63. 32. 35	65. 1. 23	66. 30. 15	67. 59. 12			
23		69. 28. 11										
23	Antares.	23. 53. 42	25. 22. 32	26. 51. 30	28. 20. 35	29. 49. 49	31. 19. 11	32. 48. 42	34. 18. 21			
24		35. 48. 9	37. 18. 6	38. 48. 13	40. 18. 29	41. 48. 56	43. 19. 33	44. 50. 21	46. 21. 20			
25		47. 52. 30	49. 23. 52	50. 55. 26	52. 27. 12	53. 59. 10	55. 31. 21	57. 3. 44	58. 36. 20			
26		60. 9. 9	61. 42. 11	63. 15. 26	64. 48. 55	66. 22. 38	67. 56. 35	69. 30. 45	71. 5. 9			
27		72. 39. 47	74. 14. 39	75. 49. 46	77. 25. 6	79. 0. 41	80. 36. 29	82. 12. 32	83. 48. 48			
28		85. 25. 19	87. 2. 4	88. 39. 2	90. 16. 15	91. 53. 41	93. 31. 21	95. 9. 14	96. 47. 20			
29		98. 25. 40										
29	α Aquilæ.	49. 57. 40	51. 17. 29	52. 38. 14	53. 59. 51	55. 22. 17	56. 45. 31	58. 9. 28	59. 34. 6			
30		60. 59. 27	62. 25. 23	63. 51. 52	65. 18. 54	66. 46. 29	68. 14. 31	69. 42. 58	71. 11. 52			
31		72. 41. 10	74. 10. 50	75. 40. 49	77. 11. 7	78. 41. 44	80. 12. 39	81. 43. 47	83. 15. 10			
Si		84. 46. 44										

[96]

AUGUST 1787.

XII.

Configurations of the SATELLITES of JUPITER
at Three o'Clock in the Morning.

1	4.	.3	.1	⊙	2.
2	4.	2.	.3	1.	⊙
3	.4		.2	⊙	.1 .3
4	.4		1.	⊙	.2 .3
5	2.⊙	.4		⊙	.1 3.
6		.2 .4 .1	3.	⊙	
7		3.		⊙	.4 2 .1
8		.3	.1	⊙	2. .4
9	1.⊙	2. .3		⊙	.4
10		.2		⊙	.1 .3 .4
11		1.		⊙	.4 .3 .4
12	2.⊙			⊙	.1 3. .4
13	3.⊙	.2 1.		⊙	.4
14		3.		⊙	.2 1. .4
15	4.⊙	.3	.1	⊙	2.
16		.4 .3 2.		⊙	1.
17	1.⊙	4.	.2	⊙	.3
18	4.		1.	⊙	.2 .3
19	4.			⊙	2. .1 3.
20	.4	2. 1.		⊙	3.⊙
21	2.⊙	.4 3.		⊙	1.
22		3. .4	.1	⊙	2.
23		.3 .4 2.		⊙	1.
24		.2 .1	.1	⊙	.3 .4
25	1.⊙			⊙	.2 .3 .4
26				⊙	.1 2. 3. .4
27		2. 1.		⊙	3. .4
28		3.	.2	⊙	.1 .4
29		3.	.1	⊙	.2 .4
30		.3	2.	⊙	1. .4
31	3.⊙	.2 .1		⊙	.4

I. SEPTEMBER 1787. [97]

Days of the Month.	Days of the Week.	Sundays, Holidays, &c.	Phases of the Moon.	
			D. H. M.	
1	Sa.	Giles.	Last Quarter -	4. 8. 21
2	Su.	13th Sunday after Trinity.	New Moon -	11. 5. 8
3	M.	[Lond. burnt 1666, O.S.]	First Quarter -	19. 0. 9
4	Tu.		Full Moon -	26. 18. 20
5	W.		Other Phenomena.	
6	Th.		D. H. M.	
7	F.	Enurchus.	1.	♂ 24 d. Lat. 21'.
8	Sa.	Nativity of B. V. Mary.		♀ 25 d. Lat. 44'.
9	Su.	14th Sunday after Trinity.	4.	♀ 19 d. Lat. 30'.
10	M.		5.	4.53 ☾ ♀
11	Tu.			5.26 ☾ 132 ☿
12	W.			8.23 ☾ ♂
13	Th.			15.30 ☾ ♀ II
14	F.	Holy Cross.		18.39 ☾ ♀ II
15	Sa.		6.11. 3	☾ ☿ II
16	Su.	15th Sunday after Trinity.	17. 1	☾ ♂ II
17	M.	Lambert.	7.	♂ 25 d. Lat. 9'.
18	Tu.		9. 1. 9	☾ ☿ ☿
19	W.		5.35	☾ 0 ☿
20	Th.		14.14	☾ π ☿
21	F.	St. Matthew.	12.	♂ 11 d. Lat. 56'.
22	Sa.	K. Geo. III. crown'd 1761.	13.	♀ χ ☿ d. Lat. 2'.
23	Su.	16th Sunday after Trinity.	15.	♂ μ II d. Lat. 56'.
24	M.		16.17.55	☾ ♂ III
25	Tu.		17.	♀ χ ☿ d. Lat. 24'.
26	W.	St. Cyprian.	18. 8. 6	Im. of θ Ophiu.
27	Th.			* 9' N. of D's center.
28	F.	[born.	9.13	Em. * 3 1/4 N.
29	Sa.	St. Mich. Prs. Char. Aug.	9.48	☾ β Ophiuchi.
30	Su.	17th Sunday after Trinity. [St. Jerome.]	19.	♀ σ ☿ d. Lat. 9'.
			20. 7.49	☾ α ♀
			10.22	☾ π ♀
			22.15.47	☉ enters ♉
			28. 4.28	☾ η ♋

[98] SEPTEMBER 1787. II.

Days of the Month.	Days of the Week.	Sun's Longitude.	Sun's Right Asc. in Time.	Sun's Declin. North.	Equat. of Time Sub.	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M. S.	S.
1	Sa.	5. 8.53.21	10.41.59,6	8. 14. 47	0.14,3	18,9
2	Su.	5. 9.51.30	10.45.37,2	7. 52. 53	0.33,2	19,2
3	M.	5. 10.49.41	10.49.14,6	7. 30. 52	0.52,4	19,3
4	Tu.	5. 11.47.53	10.52.51,7	7. 8. 44	1.11,7	19,6
5	W.	5. 12.46. 8	10.56.28,6	6. 46. 28	1.31,3	19,8
6	Th.	5. 13.44.25	11. 0. 5,3	6. 24. 6	1.51,1	20,0
7	F.	5. 14.42.44	11. 3.41,9	6. 1. 37	2.11,1	20,1
8	Sa.	5. 15.41. 6	11. 7.18,2	5. 39. 2	2.31,2	20,3
9	Su.	5. 16.39.29	11.10.54,4	5. 16. 21	2.51,5	20,5
10	M.	5. 17.37.55	11.14.30,5	4. 53. 35	3.12,0	20,5
11	Tu.	5. 18.36.22	11.18. 6,4	4. 30. 43	3.32,5	20,7
12	W.	5. 19.34.52	11.21.42,3	4. 7. 47	3.53,2	20,8
13	Th.	5. 20.33.23	11.25.18,0	3. 44. 47	4.14,0	20,8
14	F.	5. 21.31.56	11.28.53,8	3. 21. 42	4.34,8	20,9
15	Sa.	5. 22.30.31	11.32.29,3	2. 58. 34	4.55,7	20,9
16	Su.	5. 23.29. 7	11.36. 4,8	2. 35. 23	5.16,6	21,0
17	M.	5. 24.27.45	11.39.40,3	2. 12. 8	5.37,6	21,0
18	Tu.	5. 25.26.25	11.43.15,9	1. 48. 51	5.58,6	21,0
19	W.	5. 26.25. 7	11.46.51,4	1. 25. 31	6.19,6	20,9
20	Th.	5. 27.23.50	11.50.26,9	1. 2. 10	6.40,5	20,9
21	F.	5. 28.22.34	11.54. 2,5	0. 38. 48	7. 1,4	20,9
22	Sa.	5. 29.21.21	11.57.38,2	0. 15. 24	7.22,3	20,7
23	Su.	6. 0.20. 9	12. 1.13. 9	0. 8. 2	7.43,0	20,6
24	M.	6. 1.18.59	12. 4.49. 8	0. 31. 27	8. 3,6	20,5
25	Tu.	6. 2.17.51	12. 8.25. 8	0. 54. 53	8.24,1	20,3
26	W.	6. 3.16.44	12.12. 2,0	1. 18. 18	8.44,4	20,2
27	Th.	6. 4.15.40	12.15.38,3	1. 41. 44	9. 4,6	19,9
28	F.	6. 5.14.37	12.19.14,9	2. 5. 8	9.24,5	19,7
29	Sa.	6. 6.13.38	12.22.51,8	2.28. 32	9.44,2	19,4
30	Su.	6. 7.12.40	12.26.28,8	2. 51. 55	10. 3,6	

III. SEPTEMBER 1787. [99]

Days.	Semidia- meter of the Sun.	Time of D° passing the Meridian.	Hourly Motion of the Sun.	Logarithm of the Sun's Distance.	Place of the Moon's Node.
	M. S.	M. S.	M. S.		S. D. M.
1	15. 54. 8	1. 4. 3	2. 25. 3	0. 003585	9. 1. 46
7	15. 56. 3	1. 4. 1	2. 25. 7	0. 002944	9. 1. 27
13	15. 57. 9	1. 4. 0	2. 26. 2	0. 002253	9. 1. 8
19	15. 59. 4	1. 4. 0	2. 26. 7	0. 001517	9. 0. 49
25	16. 1. 1	1. 4. 1	2. 27. 3	0. 000761	9. 0. 30

Eclipses of the SATELLITES of JUPITER.

I. Satellite. Immersion.		II. Satellite. Immersion.		III. Satellite.	
Days	H. M. S.	Days	H. M. S.	Days	H. M. S.
2	8. 19. 25	1	22. 5. 18	2	21. 56. 43 I
4	2. 48. 25	5	11. 24. 14	3	0. 17. 5 E
5	21. 17. 24	9	0. 43. 13	10	1. 58. 2 I
*7	15. 46. 24	*12	14. 2. 16	10	4. 19. 40 E
9	10. 15. 25	16	3. 21. 28	17	5. 59. 21 I
11	4. 44. 24	*19	16. 40. 35	17	8. 22. 17 E
12	23. 13. 27	23	5. 59. 46	24	10. 0. 37 I
14	17. 42. 25	26	19. 18. 56	*24	12. 24. 53 E
*16	12. 11. 27	30	8. 38. 7	IV. Satellite. Conj.	
18	6. 40. 29			8	20. 44 Inf.
20	1. 9. 29			17	7. 35 Sup.
21	19. 38. 28			*25	14. 55 Inf.
*23	14. 7. 29				
25	8. 36. 28				
27	3. 5. 27				
28	21. 34. 25				
*30	16. 3. 21				

[100] SEPTEMBER 1787. IV.

Days.	Heliocen- tric Lon- gitude.	Heliocen- tric Lati- tude.	Geocen- tric Lon- gitude.	Geocen- tric Lati- tude.	Declina- tion.	Passage over Merid.
	S. D. M.	D. M.	S. D. M.	D. M.	D. M.	H. M.

MERCURY. Gr. El. 8^d.

1	10. 18. 27	3. 14 S	4. 23. 12	1. 22 S	12. 30 N	22. 56
4	1. 5. 19	1. 17 S	4. 24. 21	0. 29 S	12. 58	22. 53
7	1. 23. 20	0. 55 N	4. 26. 46	0. 18 N	12. 54	22. 53
10	2. 12. 6	3. 7	5. 0. 15	0. 56	12. 16	22. 58
13	3. 1. 0	4. 59	5. 4. 36	1. 24	11. 8	23. 5
16	3. 19. 24	6. 16	5. 9. 32	1. 41	9. 34	23. 14
19	4. 6. 45	6. 55	5. 14. 49	1. 50	7. 41	23. 23
22	4. 22. 44	6. 57	5. 20. 17	1. 51	5. 33	23. 32
25	5. 7. 17	6. 31	5. 25. 46	1. 45	3. 18	23. 42
28	5. 20. 29	5. 47	6. 1. 13	1. 36	0. 59 N	23. 51
30	5. 28. 36	5. 9	6. 4. 49	1. 27	0. 35 S	23. 56

VENUS.

1	4. 8. 54	2. 45 N	4. 26. 28	1. 11 N	13. 49 N	23. 16
7	4. 18. 39	3. 3	5. 3. 55	1. 18	11. 18	23. 23
13	4. 28. 25	3. 15	5. 11. 21	1. 23	8. 36	23. 29
19	5. 8. 10	3. 22	5. 18. 49	1. 25	5. 44	23. 35
25	5. 17. 54	3. 23	5. 26. 18	1. 25	2. 47	23. 41

MARS.

1	1. 11. 57	0. 12 S	2. 23. 43	0. 13 S	23. 7 N	18. 50
7	1. 15. 19	0. 5 S	2. 27. 15	0. 6 S	23. 21	18. 43
13	1. 18. 40	0. 1 N	3. 0. 42	0. 1 N	23. 29	18. 37
19	1. 21. 58	0. 8	3. 4. 1	0. 9	23. 34	18. 30
25	1. 25. 15	0. 14	3. 7. 11	0. 17	23. 34	18. 22

JUPITER. □ 18^d. 2^h.

1	2. 12. 38	0. 35 S	2. 23. 43	0. 34 S	22. 45 N	18. 48
7	2. 13. 10	0. 34	2. 24. 26	0. 34	22. 47	18. 30
13	2. 13. 41	0. 34	2. 25. 4	0. 34	22. 49	18. 11
19	2. 14. 13	0. 33	2. 25. 36	0. 34	22. 50	17. 52
25	2. 14. 44	0. 32	2. 26. 2	0. 34	22. 51	17. 32

SATURN.

1	10. 26. 1	1. 24 S	10. 24. 33	1. 34 S	14. 50 S	11. 6
7	10. 26. 12	1. 25	10. 24. 8	1. 34	14. 58	10. 42
13	10. 26. 24	1. 25	10. 23. 44	1. 34	15. 6	10. 19
19	10. 26. 35	1. 26	10. 23. 23	1. 34	15. 13	9. 56
25	10. 26. 46	1. 26	10. 23. 4	1. 34	15. 19	9. 34

V. SEPTEMBER 1787. [101]					
Days of the Month.	Days of the Week.	Moon's Longitude at Noon.	Moon's Longitude at Midnight.	Moon's Latitude at Noon.	Moon's Latitude at Midn.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
1	Sa.	0. 25. 24. 48	1. 2. 19. 1	4. 40. 23 N	4. 24. 21 N
2	Su.	1. 9. 15. 7	1. 16. 12. 53	4. 4. 21	3. 40. 39
3	M.	1. 23. 12. 5	2. 0. 12. 36	3. 13. 31	2. 43. 26
4	Tu.	2. 7. 14. 13	2. 14. 16. 57	2. 10. 42	1. 35. 56
5	W.	2. 21. 20. 33	2. 28. 24. 58	0. 59. 36 N	0. 22. 17 N
6	Th.	3. 5. 30. 4	3. 12. 35. 42	0. 15. 25 S	0. 52. 53 S
7	F.	3. 19. 47. 35	3. 26. 47. 31	1. 29. 32	2. 4. 45
8	Sa.	4. 3. 53. 4	4. 10. 57. 50	2. 37. 57	3. 8. 39
9	Su.	4. 18. 1. 27	4. 25. 3. 21	3. 36. 17	4. 0. 30
10	M.	5. 2. 2. 54	5. 8. 59. 40	4. 20. 55	4. 37. 16
11	Tu.	5. 15. 53. 1	5. 22. 42. 32	4. 49. 26	4. 57. 18
12	W.	5. 29. 27. 46	6. 6. 8. 22	5. 0. 55	5. 0. 20
13	Th.	6. 12. 44. 6	6. 19. 14. 49	4. 55. 43	4. 47. 17
14	F.	6. 25. 40. 25	7. 2. 1. 5	4. 35. 16	4. 20. 0
15	Sa.	7. 8. 16. 56	7. 14. 28. 15	4. 1. 43	3. 40. 47
16	Su.	7. 20. 35. 26	7. 26. 38. 55	3. 17. 30	2. 52. 10
17	M.	8. 2. 39. 13	8. 8. 36. 57	2. 25. 7	1. 56. 39
18	Tu.	8. 14. 32. 43	8. 20. 27. 11	1. 27. 3	0. 56. 36 S
19	W.	8. 26. 21. 3	9. 2. 15. 2	0. 25. 36 S	0. 5. 42 N
20	Th.	9. 8. 9. 47	9. 14. 6. 4	0. 37. 0 N	1. 8. 1
21	F.	9. 20. 4. 31	9. 26. 5. 44	1. 38. 26	2. 8. 0
22	Sa.	10. 2. 10. 21	10. 8. 18. 55	2. 36. 21	3. 3. 10
23	Su.	10. 14. 31. 50	10. 20. 49. 34	3. 28. 5	3. 50. 49
24	M.	10. 27. 12. 19	11. 3. 40. 19	4. 10. 52	4. 28. 2
25	Tu.	11. 10. 13. 35	11. 16. 52. 9	4. 41. 51	4. 52. 4
26	W.	11. 23. 35. 45	0. 0. 24. 12	4. 58. 23	5. 0. 31
27	Th.	0. 7. 17. 0	0. 14. 13. 46	4. 58. 20	4. 51. 44
28	F.	0. 21. 13. 51	0. 28. 16. 44	4. 40. 42	4. 25. 19
29	Sa.	1. 5. 21. 42	1. 12. 28. 13	4. 5. 45	3. 42. 17
30	Su.	1. 19. 35. 38	1. 26. 43. 27	3. 15. 15	2. 45. 8

[102] SEPTEMBER 1787. VI

Days of the Month.	Days of the Week.	D's Age.	D's Pals. age over Merid.	D's Right Ascen. at Noon.	D's Right Ascen. at Midn.	D's Declination at Noon.	D's Declination at Midn.
			H. M.	D. M.	D. M.	D. M.	D. M.
1	Sa.	21	15. 18	21. 47	28. 32	14. 11 N	16. 25 N
2	Su.	22	16. 13	35. 29	42. 37	18. 27	20. 14
3	M.	23	17. 11	49. 56	57. 24	21. 43	22. 53
4	Tu.	24	18. 11	65. 1	72. 44	23. 42	24. 8
5	W.	25	19. 12	80. 30	88. 16	24. 11	25. 50
6	Th.	26	20. 12	95. 59	103. 36	23. 6	22. 0
7	F.	27	21. 9	111. 5	118. 25	20. 33	18. 47
8	Sa.	28	22. 2	125. 34	132. 32	16. 45	14. 28
9	Su.	29	22. 53	139. 20	145. 59	12. 1	9. 24
10	M.	30	23. 42	152. 29	158. 52	6. 42	3. 55 N
11	Tu.	1	♂	165. 8	171. 21	1. 8 N	1. 39 S
12	W.	2	0. 29	177. 30	183. 38	4. 23 S	7. 2
13	Th.	3	1. 16	189. 46	195. 54	9. 34	11. 58
14	F.	4	2. 3	202. 4	208. 17	14. 12	16. 15
15	Sa.	5	2. 51	214. 32	220. 51	18. 6	19. 43
16	Su.	6	3. 40	227. 12	233. 37	21. 6	22. 13
17	M.	7	4. 30	240. 4	246. 33	23. 5	23. 41
18	Tu.	8	5. 20	253. 3	259. 32	24. 1	24. 4
19	W.	9	6. 9	266. 1	272. 27	23. 51	23. 21
20	Th.	10	6. 58	278. 51	285. 11	22. 36	21. 36
21	F.	11	7. 47	291. 28	297. 41	20. 21	18. 52
22	Sa.	12	8. 34	303. 50	309. 55	17. 10	15. 15
23	Su.	13	9. 20	315. 58	321. 59	13. 10	10. 55
24	M.	14	10. 6	327. 58	333. 57	8. 31	6. 0
25	Tu.	15	10. 52	339. 58	346. 2	3. 23 S	0. 42 S
26	W.	16	11. 39	352. 9	358. 22	2. 1 N	4. 45 N
27	Th.	17	12. 29	4. 42	11. 11	7. 28	10. 6
28	F.	18	13. 21	17. 49	24. 38	12. 37	15. 0
29	Sa.	19	14. 16	31. 38	38. 49	17. 11	19. 8
30	Su.	20	15. 15	46. 12	53. 44	20. 47	22. 7

VII SEPTEMBER 1787. [103]

Days of the Month.	Days of the Week.	Semid. D at Noon. M. S.	Semid. D at Midnight. M. S.	Hon. Par. D at Noon. M. S.	Hon. Par. D at Midnight. M. S.	Propor. Lo. at Noon.	Propor. Lo. at Midn.
1	Sa.	15. 55	15. 58	58. 25	58. 36	4887	4874
2	Su.	16. 1	16. 4	58. 46	58. 56	4861	4849
3	M.	16. 6	16. 8	59. 4	59. 12	4839	4830
4	Tu.	16. 10	16. 11	59. 18	59. 24	4822	4815
5	W.	16. 12	16. 13	59. 27	59. 30	4811	4808
6	Th.	16. 13	16. 13	59. 32	59. 32	4805	4805
7	F.	16. 13	16. 12	59. 31	59. 28	4806	4810
8	Sa.	16. 11	16. 9	59. 23	59. 15	4816	4826
9	Su.	16. 6	16. 3	59. 6	58. 55	4837	4850
10	M.	16. 0	15. 56	58. 43	58. 28	4865	4883
11	Tu.	15. 51	15. 46	58. 12	57. 53	4903	4927
12	W.	15. 41	15. 36	57. 33	57. 13	4952	4977
13	Th.	15. 30	15. 25	56. 53	56. 33	5003	5028
14	F.	15. 19	15. 14	56. 13	55. 54	5054	5079
15	Sa.	15. 9	15. 5	55. 36	55. 20	5102	5123
16	Su.	15. 1	14. 57	55. 5	54. 52	5142	5159
17	M.	14. 54	14. 52	54. 41	54. 33	5174	5185
18	Tu.	14. 50	14. 49	54. 27	54. 24	5193	5197
19	W.	14. 49	14. 50	54. 23	54. 25	5198	5195
20	Th.	14. 51	14. 53	54. 30	54. 37	5189	5179
21	F.	14. 55	14. 59	54. 46	54. 58	5167	5152
22	Sa.	15. 3	15. 7	55. 12	55. 27	5133	5114
23	Su.	15. 14	15. 16	55. 45	56. 3	5090	5067
24	M.	15. 22	15. 27	56. 23	56. 43	5041	5015
25	Tu.	15. 33	15. 39	57. 4	57. 25	4989	4962
26	W.	15. 44	15. 50	57. 45	58. 5	4937	4912
27	Th.	15. 55	15. 59	58. 23	58. 39	4890	4870
28	F.	16. 3	16. 6	58. 54	59. 6	4852	4837
29	Sa.	16. 9	16. 11	59. 17	59. 25	4823	4813
30	Su.	16. 13	16. 14	59. 31	59. 35	4806	4801

IX. SEPTEMBER 1787. [105]

Days.	Stars Names.	Noon.	3 Hours.	6 Hours.	9 Hours.	12 Hours.	15 Hours.	18 Hours.	21 Hours.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
17	Fomal-	87. 28. 30	86. 7. 23	84. 46. 25	83. 25. 38	82. 5. 0	80. 44. 31	79. 24. 12	78. 4. 4
18	haut.	76. 44. 5	75. 24. 16	74. 4. 38	72. 45. 11	71. 25. 55	70. 6. 49	68. 47. 55	67. 29. 14
19		66. 10. 44	64. 52. 27	63. 34. 24	62. 16. 36	60. 59. 2	59. 41. 45	58. 24. 44	57. 8. 2
20		55. 51. 37							
20	α Pegasi.	73. 11. 51	71. 45. 42	70. 19. 30	68. 53. 16	67. 27. 0	66. 0. 41	64. 34. 18	63. 7. 53
21		61. 41. 25	60. 14. 52	58. 48. 17	57. 21. 39	55. 54. 58	54. 28. 13	53. 1. 28	51. 34. 41
22		50. 7. 54	48. 41. 7	47. 14. 20	45. 47. 35	44. 20. 52			
22									
23		79. 44. 0	78. 10. 30	76. 36. 44	75. 2. 41	73. 28. 22	84. 22. 49	82. 50. 9	81. 17. 13
24	α Arietis.	67. 8. 14	65. 32. 28	63. 56. 24	62. 20. 3	60. 43. 24	71. 53. 46	70. 18. 52	68. 43. 42
25		54. 13. 58	52. 35. 53	50. 57. 32	49. 18. 56	47. 40. 3	59. 6. 28	57. 29. 15	55. 51. 45
26		41. 2. 8					46. 0. 55	44. 21. 33	42. 41. 58
26									
27	Aldeba-	73. 52. 27	72. 12. 5	70. 31. 27	68. 50. 34	67. 9. 26	65. 28. 3	63. 46. 26	62. 4. 36
28	ran.	60. 22. 32	58. 40. 15	56. 57. 47	55. 15. 7	53. 32. 17	51. 49. 16	50. 6. 6	48. 22. 51
29		46. 39. 28	44. 56. 0	43. 12. 29	41. 28. 57	39. 45. 23	38. 1. 50	36. 18. 19	34. 34. 52
29		32. 51. 29							
29									
30	Pollux.	74. 35. 15	72. 50. 5	71. 4. 51	69. 19. 33	67. 34. 11	65. 48. 46	64. 3. 20	62. 17. 52
30		60. 32. 24	58. 46. 55	57. 1. 28	55. 16. 4	53. 30. 41	51. 45. 23	50. 0. 9	48. 15. 2
O. 1		46. 30. 0							

Distances of γ 's Center from Sun, and from Stars west of her.

Days.	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.
1	α Pegasi.	37.	1. 56	38.	36. 7	40.	11. 0	41.	46. 35	43.	22. 46	44.	59. 33	46.	36. 49	48.	14. 35
2		49.	52. 50	51.	31. 27	53.	10. 25	54.	49. 45	56.	29. 26	58.	9. 24	59.	49. 38	61.	30. 8
3		63.	10. 52														
3	α Arietis	19.	33. 35	21.	14. 32	22.	56. 3	24.	38. 6	26.	20. 41	28.	3. 40	29.	46. 59	31.	30. 40
4		33.	14. 40	34.	58. 53	36.	43. 18	38.	27. 56	40.	12. 45	41.	57. 43	43.	42. 49	45.	28. 3
5		47.	13. 26	48.	58. 56	50.	44. 31	52.	30. 13	54.	15. 59						
5	Aldeba- ran.									22.	20. 14	24.	0. 42	25.	41. 48	27.	23. 31
6		29.	5. 55	30.	48. 46	32.	32. 3	34.	15. 41	35.	59. 41	37.	43. 51	39.	28. 11	41.	12. 44
7		42.	57. 28	44.	42. 18	46.	27. 14	48.	12. 14	49.	57. 20	51.	42. 27	53.	27. 35	55.	12. 44
8		56.	57. 53	58.	43. 1	60.	28. 7	62.	13. 10	63.	58. 12	65.	43. 10	67.	28. 2	69.	12. 51
9		70.	57. 33	72.	42. 9	74.	26. 37	76.	10. 18	77.	55. 10						
14	The Sun.	45.	54. 43	47.	19. 54	48.	44. 51	50.	9. 34	50.	11. 33	51.	37. 43	53.	3. 37	54.	29. 17
15		57.	9. 59	58.	33. 26	59.	56. 42	61.	19. 48	51.	34. 4	52.	58. 21	54.	22. 26	55.	46. 18
16		68.	12. 41	69.	34. 48	70.	56. 48	72.	18. 41	62.	42. 42	64.	5. 26	65.	28. 0	66.	50. 25
17		79.	6. 31	80.	27. 50	81.	49. 5	83.	10. 18	73.	49. 27	75.	2. 6	76.	23. 39	77.	45. 8
18		89.	55. 56	91.	17. 3	92.	38. 12	93.	59. 22	84.	31. 28	85.	52. 36	87.	13. 43	88.	34. 50
19		100.	45. 54	102.	7. 27	103.	29. 5	104.	50. 50	95.	20. 34	96.	41. 48	98.	3. 6	99.	24. 28
20		111.	41. 24	113.	3. 56	114.	26. 38	115.	49. 31	106.	12. 41	107.	34. 40	108.	56. 46	110.	19. 1
21										117.	12. 33	118.	35. 47	119.	59. 13	121.	22. 52

XI. SEPTEMBER 187. [107]

Days	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.
19		19.	57. 8	21.	25. 19	22.	53. 35	24.	21. 56	25.	50. 21	27.	18. 52	28.	47. 29	30.	16. 13
20		31.	45. 3	33.	14. 0	34.	43. 5	36.	12. 18	37.	41. 38	39.	11. 7	40.	40. 44	42.	10. 32
21		43.	40. 29	45.	10. 36	46.	40. 55	48.	11. 25	49.	42. 6	51.	12. 59	52.	44. 6	54.	15. 25
22	Antares.	55.	46. 58	57.	18. 45	58.	50. 47	60.	23. 4	61.	55. 36	63.	18. 23	65.	1. 26	66.	34. 45
23		68.	8. 20	69.	42. 13	71.	16. 23	72.	50. 50	74.	25. 35	76.	0. 37	77.	35. 58	79.	11. 36
24		80.	47. 33	82.	23. 49	84.	0. 23	85.	37. 16	87.	14. 27	88.	51. 57	90.	25. 46	92.	7. 54
25		93.	46. 20	95.	25. 5	97.	4. 10	98.	43. 33	100.	23. 16						
26		57.	6. 32	58.	32. 13	59.	58. 39	61.	25. 48	62.	53. 40	64.	22. 8	65.	51. 10	67.	20. 47
27	α Aquila.	68.	50. 58	70.	21. 40	71.	52. 48	73.	24. 23	74.	56. 24	76.	28. 49	78.	1. 31	79.	34. 33
28		81.	7. 59														
29		33.	20. 5	34.	54. 26	36.	29. 36	38.	5. 39	39.	42. 39	41.	20. 22	42.	58. 43	44.	37. 41
30	α Pegasi.	46.	17. 16	47.	57. 16	49.	37. 42	51.	18. 34	52.	59. 49	54.	41. 22	56.	23. 13	58.	5. 18
31		59.	47. 39	61.	30. 12	63.	12. 58	64.	55. 48	66.	38. 50	68.	22. 0	70.	5. 16	71.	48. 36
0.1		73.	32. 3														

108] SEPTEMBER 1787. XII.

Configurations of the SATELLITES of JUPITER
at Four o' Clock in the Morning.

1	1●	.		4.	○	.2	.3	
2			4.		○	.1	2.	7.
3		4.		2.	1.	○	3.	
4	4.			3.	.1	○	.1	
5	4.		3.		.1	○		.2
6	.4		.3			○	1.	2●
7		.4		.2	.1	.3	○	
8	1●		4.			○	.2	.3
9	1.0				.4	○	2.	3.
10				2.	1.	○	.4	3.
11				3.	.2	○	.1	.4
12			3.		1.	○	.2	.4
13	2●		.3			○	1.	.4
14				.2	.1	.3	○	
15						○	.2	.3
16	1.0					○	1.	.4
17				2.	1.	○	4.	3.
18				.2	4.3.	○	.1	
19			3 6 4		1.	○		.2
20		4.	.3			○	2.	.1
21	4.			2.	1	6 3	○	
22	.4					○	1.	.3
23		.4			.1	○	2.	.3
24	1●	.4			2.	○		3.
25	3●			.4	.2	○	.1	
26	4●		3.		1.	○		.2
27			.3			○	2.	.1
28				2.	.3	1.	○	.4
29	2.0					○	1.	.3
30					.1	○	2.	.3

I. OCTOBER 1787. [109]

Days of the Month.	Days of the Week.	Sundays, Holidays, &c.	Phases of the Moon.	
			D. H.M.	
			Last Quarter	— 3. 14. 30
			New Moon	— 10. 17. 53
			First Quarter	— 18. 20. 0
			Full Moon	— 26. 5. 34
			Other Phenomena.	
			D.H.M.	
1	M.	Remigius.	2.10.56	☾ 132 ☿
2	Tu.		14. 5	☾ ♃
3	W.		21. 1	☾ ♄ II
4	Th.		3. 0.10	☾ ♀ II
5	F.		15.45	☾ ☿
6	Sa.	Faith.	16.41	☾ ♄ II
7	Su.	18th Sunday after Trinity.	6. 7.53	☾ ☿ ☿
8	M.		12.25	☾ ☿ ☿
9	Tu.	St. Denys.	21.17	☾ ♀ ☿
10	W.	Oxf. and Cam. Ter. beg.	8.17.42	☾ ☿ ☿
11	Th.		12.	☿ ♄ II d.L. 58'
12	F.		14. 2.12	☾ ♄ ☿
13	Sa.	Transf. of K. Edw. Conf.	15.	☿ Stationary.
14	Su.	19th Sunday after Trinity.	16. 1	☾ ☿ Ophiuchi.
15	M.		17.55	☾ ☿ Ophiuchi.
16	Tu.	Etheldred.	17.16. 2	☾ ☿ ☿
17	W.	St. Luke.	18.36	☾ ♀ ☿
18	Th.		22.23.45	☾ enters ☿
19	F.		25.13.57	☾ ♄ ☿
20	Sa.		28.	☿ Stationary.
21	Su.	20th Sunday after Trinity.	29.17.39	☾ 132 ☿
22	M.		21. 4½	☾ ♃ Im. ♃ 4'
23	Tu.			N. of ☿'s
24	W.			cent.
25	Th.	K. Geo. III. Acces. Crisp.	21.50	Em. ♃ 10' N.
26	F.	K. Geo. III. Procl. 1760.	30. 3.27	☾ ♄ II
27	Sa.		6.31	☾ ♀ II
28	Su.	21st Sunday after Trinity.	22.40	☾ ♄ II
29	M.	[St. Simon and St. Jude.		
30	Tu.			
31	W.			

[110]		OCTOBER 1787.				II.
Days of the Month.	Days of the Week.	Sun's Longitude.	Sun's Right Asc. in Time.	Sun's Declin. South.	Equat. of Time. Sub.	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M. S.	S.
1	M.	6. 8. 11. 44	12. 30. 6, 2	3. 15. 15	10. 22, 7	18, 8
2	Tu.	6. 9. 10. 51	12. 33. 43, 9	3. 38. 34	10. 41, 5	18, 5
3	W.	6. 10. 10. 0	12. 37. 21, 9	4. 1. 51	11. 0. 0	18, 1
4	Th.	6. 11. 9. 11	12. 41. 0, 3	4. 25. 4	11. 18, 1	17, 8
5	F.	6. 12. 8. 25	12. 44. 39, 0	4. 48. 15	11. 35, 9	17, 3
6	Sa.	6. 13. 7. 42	12. 48. 18, 2	5. 11. 22	11. 53, 2	16, 9
7	Su.	6. 14. 7. 1	12. 51. 57, 8	5. 34. 25	12. 10, 1	16, 5
8	M.	6. 15. 6. 22	12. 55. 37, 8	5. 57. 25	12. 26, 5	16, 1
9	Tu.	6. 16. 5. 45	12. 59. 18, 2	6. 20. 20	12. 42, 7	15, 6
10	W.	6. 17. 5. 11	13. 2. 59, 1	6. 43. 10	12. 58, 3	15, 2
11	Th.	6. 18. 4. 39	13. 6. 40, 5	7. 5. 54	13. 13, 5	14, 7
12	F.	6. 19. 4. 9	13. 10. 22, 3	7. 28. 32	13. 28, 2	14, 1
13	Sa.	6. 20. 3. 41	13. 14. 4, 7	7. 51. 5	13. 42, 3	13, 5
14	Su.	6. 21. 3. 15	13. 17. 47, 7	8. 13. 31	13. 55, 8	13, 1
15	M.	6. 22. 2. 50	13. 21. 31, 2	8. 35. 49	14. 8, 9	12, 6
16	Tu.	6. 23. 2. 27	13. 25. 15, 1	8. 58. 6	14. 21, 5	12, 0
17	W.	6. 24. 2. 7	13. 28. 59, 6	9. 20. 4	14. 33, 5	11, 4
18	Th.	6. 25. 1. 48	13. 32. 44, 8	9. 42. 0	14. 44, 9	10, 8
19	F.	6. 26. 1. 31	13. 36. 30, 5	10. 3. 46	14. 55, 7	10, 2
20	Sa.	6. 27. 1. 15	13. 40. 16, 8	10. 25. 24	15. 5, 9	9, 5
21	Su.	6. 28. 1. 1	13. 44. 3, 8	10. 46. 53	15. 15, 4	8, 9
22	M.	6. 29. 0. 48	13. 47. 51, 4	11. 8. 11	15. 24, 3	8, 2
23	Tu.	7. 0. 0. 38	13. 51. 39, 7	11. 29. 20	15. 32, 5	7, 6
24	W.	7. 1. 0. 29	13. 55. 28, 7	11. 50. 18	15. 40, 1	6, 9
25	Th.	7. 2. 0. 22	13. 59. 18, 4	12. 11. 5	15. 47, 0	6, 2
26	F.	7. 3. 0. 16	14. 3. 8, 7	12. 31. 41	15. 53, 2	5, 4
27	Sa.	7. 4. 0. 13	14. 6. 59, 8	12. 52. 5	15. 58, 6	4, 6
28	Su.	7. 5. 0. 12	14. 10. 51, 7	13. 12. 17	16. 3, 2	3, 9
29	M.	7. 6. 0. 13	14. 14. 44, 4	13. 32. 17	16. 7, 1	3, 1
30	Tu.	7. 7. 0. 16	14. 18. 37, 8	13. 52. 4	16. 16, 2	2, 4
31	W.	7. 8. 0. 21	14. 22. 32, 0	14. 11. 38	16. 12, 6	

III. OCTOBER 1787. [III]

Days.	Semidia- meter of the Sun.	Time of D ^o passing the Meridian.	Hourly Motion of the Sun.	Logarithm of the Sun's Distance.	Place of the Moon's Node.
	M. S.	M. S.	M. S.		S. D. M.
1	16. 2. 7	1. 4. 3	2. 27. 8	0.000015	9. 0. 11
7	16. 4. 4	1. 4. 6	2. 28. 4	9.99282	8. 29. 52
13	16. 5. 0	1. 5. 0	2. 28. 9	9.998539	8. 29. 33
19	16. 7. 7	1. 5. 5	2. 29. 3	9.997786	8. 29. 14
25	16. 9. 3	1. 6. 1	2. 29. 7	9.997058	8. 28. 55

ECLIPSES of the SATELLITES of JUPITER.

I. Satellite. Immersion.		II. Satellite. Immersion.		III. Satellite.	
Days	H. M. S.	Days	H. M. S.	Days	H. M. S.
*2	10. 32. 18	3	21. 57. 16	*1	14. 1. 43 I
4	5. 1. 14	*7	11. 16. 24	*1	16. 27. 14 E
5	23. 30. 8	11	0. 35. 26	8	18. 2. 35 I
7	17. 59. 1	*14	13. 54. 25	8	20. 29. 11 E
*9	12. 27. 52	18	3. 13. 18	15	22. 3. 4 I
11	6. 56. 42	*21	16. 32. 7	16	0. 30. 54 E
13	1. 25. 29	25	5. 50. 48	23	2. 3. 3 I
14	19. 54. 14	28	19. 9. 23	23	4. 32. 7 E
*16	14. 22. 58			30	6. 2. 28 I
18	8. 51. 42			*30	8. 32. 47 E
20	3. 20. 23			IV. Satellite. Conj.	
21	21. 49. 2			4	1. 9 Sup.
*23	16. 17. 40			12	7. 56 Inf.
*25	10. 46. 16			*20	17. 50 Sup.
27	5. 14. 48			29	0. 2 Inf.
28	23. 43. 17				
*30	18. 11. 42				

[112] OCTOBER 1787. IV.

Days.	Heliocen- tric Lon- gitude.	Heliocen- tric Lati- tude.	Geocen- tric Lon- gitude.	Geocen- tric Lati- tude.	Declina- tion.	Passage over Merid.
	S. D. M.	D. M.	S. D. M.	D. M.	D. M.	H. M.

MERCURY. Sup. δ 3^d. 2^h.

1	6. 2. 29	4. 49 N	6. 6. 35	1. 22 N	1. 21 S	23. 59
4	6. 13. 20	3. 45	6. 11. 50	1. 6	3. 41	0. 5
7	6. 23. 43	2. 39	6. 16. 59	0. 48	5. 57	0. 12
10	7. 3. 16	1. 32	6. 22. 1	0. 28	8. 9	0. 19
13	7. 12. 20	0. 26 N	6. 26. 56	0. 8 N	10. 16	0. 26
16	7. 21. 2	0. 38 S	7. 1. 45	0. 12 S	12. 18	0. 33
19	7. 29. 29	1. 40	7. 6. 29	0. 33	14. 13	0. 39
22	8. 7. 46	2. 38	7. 11. 8	0. 53	16. 1	0. 46
25	8. 16. 0	3. 32	7. 15. 42	1. 12	17. 42	0. 52
28	8. 24. 16	4. 22	7. 20. 11	1. 31	19. 16	0. 58
31	9. 2. 40	5. 7	7. 24. 35	1. 48	20. 41	1. 4

VENUS. Sup. δ 17^d. 22^h.

1	5. 27. 38	3. 18 N	6. 3. 47	1. 23 N	0. 14 S	23. 47
7	6. 7. 20	3. 8	6. 11. 17	1. 19	3. 16	23. 53
13	6. 17. 2	2. 52	6. 18. 47	1. 12	6. 16	23. 58
19	6. 26. 41	2. 31	6. 26. 18	1. 4	9. 11	0. 3
25	7. 6. 19	2. 7	7. 3. 49	0. 53	11. 58	0. 8

MARS. $\square$ 5^d. 0^h.

1	1. 28. 29	0. 20 N	3. 10. 13	0. 26 N	23. 30 N	18. 13
7	2. 1. 41	0. 26	3. 13. 6	0. 36	23. 25	18. 4
13	2. 4. 52	0. 32	3. 15. 48	0. 46	23. 17	17. 54
19	2. 8. 0	0. 38	3. 18. 17	0. 56	23. 9	17. 42
25	2. 11. 7	0. 44	3. 20. 23	1. 8	23. 1	17. 29

JUPITER.

1	2. 15. 15	0. 32 S	2. 26. 21	0. 34 S	22. 51 N	17. 12
7	2. 15. 46	0. 31	2. 26. 33	0. 34	22. 52	16. 51
13	2. 16. 17	0. 30	2. 26. 39	0. 34	22. 52	16. 29
19	2. 16. 48	0. 30	2. 26. 37	0. 33	22. 52	16. 6
25	2. 17. 20	0. 29	2. 26. 28	0. 33	22. 52	15. 43

SATURN.

1	10. 26. 58	1. 27 S	10. 22. 48	1. 33 S	15. 24 S	9. 11
7	10. 27. 9	1. 27	10. 22. 35	1. 33	15. 28	8. 49
13	10. 27. 20	1. 27	10. 22. 25	1. 33	15. 31	8. 26
19	10. 27. 32	1. 28	10. 22. 19	1. 32	15. 33	8. 3
25	10. 27. 43	1. 28	10. 22. 16	1. 32	15. 33	7. 40

OCTOBER 1787. [113]					
Days of the Month.	Days of the Week.	Moon's Longitude at Noon.	Moon's Longitude at Midnight.	Moon's Latitude at Noon.	Moon's Latitude at Midnight.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
1	M.	2. 3. 51. 12	2. 10. 58. 29	2. 12. 22 N	1. 37. 32 N
2	Tu.	2. 18. 4. 57	2. 25. 10. 28	1. 1. 13 N	0. 24. 1 N
3	W.	3. 2. 14. 45	3. 9. 17. 44	0. 13. 29 S	0. 50. 40 S
4	Th.	3. 16. 19. 17	3. 23. 19. 25	1. 26. 57	2. 1. 47
5	F.	4. 0. 17. 57	4. 7. 14. 56	2. 34. 39	3. 5. 4
6	Sa.	4. 14. 10. 8	4. 21. 3. 32	3. 32. 35	3. 56. 53
7	Su.	4. 27. 14. 53	5. 4. 44. 4	4. 17. 35	4. 34. 30
8	M.	5. 11. 30. 48	5. 18. 14. 55	4. 47. 24	4. 56. 12
9	Tu.	5. 24. 56. 5	6. 1. 34. 8	5. 0. 52	5. 1. 24
10	W.	6. 8. 8. 45	6. 14. 39. 50	4. 57. 55	4. 50. 33
11	Th.	6. 21. 7. 6	6. 27. 30. 33	4. 39. 30	4. 25. 1
12	F.	7. 3. 50. 3	7. 10. 5. 39	4. 7. 23	3. 46. 54
13	Sa.	7. 16. 17. 27	7. 22. 25. 35	3. 23. 53	2. 58. 41
14	Su.	7. 28. 30. 19	8. 4. 31. 58	2. 31. 38	2. 3. 2
15	M.	8. 10. 30. 54	8. 16. 27. 37	1. 33. 16	1. 2. 36 S
16	Tu.	8. 22. 22. 36	8. 28. 16. 26	0. 31. 22 S	0. 0. 7 N
17	W.	9. 4. 9. 44	9. 10. 3. 8	0. 31. 36 N	1. 2. 46
18	Th.	9. 15. 57. 19	9. 21. 53. 0	1. 33. 20	2. 3. 3
19	F.	9. 27. 50. 49	10. 3. 51. 33	2. 31. 35	2. 58. 41
20	Sa.	10. 9. 55. 46	10. 16. 4. 10	3. 24. 1	3. 47. 18
21	Su.	10. 22. 17. 19	10. 28. 35. 44	4. 8. 11	4. 26. 20
22	M.	11. 4. 59. 52	11. 11. 30. 5	4. 41. 27	4. 53. 9
23	Tu.	11. 18. 6. 33	11. 24. 49. 29	5. 1. 11	5. 5. 13
24	W.	0. 1. 38. 45	0. 8. 34. 8	5. 4. 59	5. 0. 19
25	Th.	0. 15. 35. 21	0. 22. 41. 47	4. 51. 5	4. 37. 15
26	F.	0. 29. 52. 52	1. 7. 7. 45	4. 18. 53	3. 56. 11
27	Sa.	1. 14. 25. 35	1. 21. 45. 26	3. 29. 26	2. 59. 5
28	Su.	1. 29. 6. 23	2. 6. 27. 32	2. 25. 39	1. 49. 43
29	M.	2. 13. 48. 2	2. 21. 7. 8	1. 11. 57 N	0. 33. 4 N
30	Tu.	2. 28. 24. 13	3. 5. 38. 43	0. 6. 13 S	0. 45. 13 S
31	W.	3. 12. 50. 15	3. 19. 58. 35	1. 23. 13	1. 59. 38

[114]		OCTOBER 1787.					VI.
Days of the Month.	Days of the Week.	D's Age.	D's Passage over Merid.	D's Right Ascension at Noon.	D's Right Ascens. at Midn.	D's Declination at Noon.	D's Declination at Midn.
			H. M.	D. M.	D. M.	D. M.	D. M.
1	M.	21	16. 15	61. 24	69. 9	23. 6 N	23.43 N
2	Tu.	22	17. 16	76. 57	84.43	23.57	23.47
3	W.	23	18. 15	92. 26	100. 3	23.13	22.18
4	Th.	24	19. 12	107. 31	114.49	21. 2	19.27
5	F.	25	20. 6	121. 55	128.51	17.36	15.30
6	Sa.	26	20. 56	135. 35	142.10	13.12	10.45
7	Su.	27	21. 44	148. 36	154.55	8.11	5.31
8	M.	28	22. 31	161. 8	167.16	2.49 N	0. 6 N
9	Tu.	29	23. 18	173. 21	179.26	2.35 S	5.14 S
10	W.	1	♂	185. 30	191.35	7.48	10.15
11	Th.	2	0. 5	197. 43	203.54	12.34	14.43
12	F.	3	0. 52	210. 8	216.26	16.41	18.27
13	Sa.	4	1. 40	222. 47	229.12	19.59	21.17
14	Su.	5	2. 30	235. 39	242. 9	22.19	23. 5
15	M.	6	3. 20	248. 40	255.11	23.35	23.49
16	Tu.	7	4. 10	261. 40	268. 7	23.46	23.27
17	W.	8	4. 59	274. 31	280.51	22.52	22. 2
18	Th.	9	5. 46	287. 7	293.18	20.58	19.39
19	F.	10	6. 33	299. 24	305.27	18. 8	16.25
20	Sa.	11	7. 19	311. 26	317.23	14.31	12.26
21	Su.	12	8. 4	323. 17	329.12	10.11	7.48
22	M.	13	8. 49	335. 7	341. 5	5.19	2.44 S
23	Tu.	14	9. 35	347. 6	353.14	0. 5 S	2.37 N
24	W.	15	10. 23	359. 29	5.53	5.19 N	8. 0
25	Th.	16	11. 14	12. 27	19.14	10.37	13. 7
26	F.	17	12. 9	26. 13	33.26	15.28	17.37
27	Sa.	18	13. 8	40. 52	48.30	19.31	21. 6
28	Su.	19	14. 10	56. 19	64.15	22.21	23.13
29	M.	20	15. 13	72. 16	80.17	23.40	23.43
30	Tu.	21	16. 14	88. 16	96. 8	23.21	22.36
31	W.	22	17. 12	103. 49	111.18	21.28	20. 0

VII. OCTOBER 1787. [115]

Days of the Month.	Days of the Week.	Semid. δ at Noon.	Semid. δ at Mid-night.	Hor. Par. δ at Noon.	Hor. Par. δ at Midnight.	Proport. Lo- gar. at Noon.	Proport. Lo- gar. at Midn.
		M. S.	M. S.	M. S.	M. S.		
1	M.	16. 14	16. 14	59. 35	59. 36	4800	4800
2	Tu.	16. 14	16. 13	59. 34	59. 31	4802	4806
3	W.	16. 12	16. 10	59. 26	59. 21	4812	4819
4	Th.	16. 8	16. 6	59. 14	59. 6	4827	4837
5	F.	16. 4	16. 1	58. 57	58. 48	4848	4859
6	Sa.	15. 58	15. 55	58. 37	58. 26	4872	4886
7	Su.	15. 52	15. 49	58. 14	58. 1	4901	4917
8	M.	15. 45	15. 41	57. 48	57. 34	4933	4951
9	Tu.	15. 37	15. 33	57. 19	57. 4	4970	4989
10	W.	15. 29	15. 25	56. 49	56. 33	5008	5028
11	Th.	15. 20	15. 16	56. 17	56. 1	5049	5069
12	F.	15. 12	15. 8	55. 45	55. 31	5090	5108
13	Sa.	15. 4	15. 0	55. 17	55. 4	5127	5144
14	Su.	14. 57	14. 54	54. 52	54. 42	5159	5173
15	M.	14. 52	14. 50	54. 33	54. 27	5185	5193
16	Tu.	14. 49	14. 48	54. 22	54. 20	5199	5202
17	W.	14. 48	14. 49	54. 20	54. 22	5202	5199
18	Th.	14. 50	14. 52	54. 27	54. 35	5193	5182
19	F.	14. 55	14. 59	54. 45	54. 59	5169	5150
20	Sa.	15. 3	15. 8	55. 14	55. 32	5130	5107
21	Su.	15. 13	15. 19	55. 51	56. 13	5082	5054
22	M.	15. 25	15. 32	56. 36	57. 0	5025	4994
23	Tu.	15. 39	15. 46	57. 25	57. 51	4962	4930
24	W.	15. 52	15. 59	58. 16	58. 40	4898	4869
25	Th.	16. 5	16. 11	59. 3	59. 25	4841	4813
26	F.	16. 17	16. 21	59. 44	60. 0	4790	4771
27	Sa.	16. 24	16. 27	60. 12	60. 21	4757	4746
28	Su.	16. 28	16. 29	60. 27	60. 29	4739	4736
29	M.	16. 28	16. 27	60. 26	60. 21	4740	4746
30	Tu.	16. 25	16. 22	60. 14	60. 4	4754	4766
31	W.	16. 19	16. 15	59. 52	59. 38	4781	4798

Distances of γ 's Center from Sun, and from Stars east of her.

Days.	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.
1	Regulus.	83.	1. 2	81.	14. 15	79.	27. 30	77.	40. 46	75.	54. 4	74.	7. 24	72.	20. 48	70.	34. 15
2		68.	47. 45	67.	1. 18	65.	14. 56	63.	28. 38	61.	42. 25	59.	56. 17	58.	10. 15	56.	24. 18
3		54.	38. 27	52.	52. 43			49.	21. 36	47.	36. 14						
4	The Sun.					121.	0. 25	119.	21. 15	117.	42. 5	116.	2. 56	114.	23. 49	112.	44. 44
5		111.	5. 41	109.	26. 40	107.	47. 42	106.	8. 48	104.	29. 57	102.	51. 10	101.	12. 27	99.	33. 49
6		97.	55. 15	96.	16. 46	94.	38. 23	93.	0. 5	91.	21. 52	89.	43. 45	88.	5. 45	86.	27. 50
7		84.	50. 1	83.	12. 18	81.	34. 43	79.	57. 14	78.	19. 52	76.	42. 37	75.	5. 29	73.	28. 29
8	Aquila.	71.	51. 36	70.	14. 51	68.	38. 15	67.	1. 46	65.	25. 26	63.	49. 14	62.	13. 11	60.	37. 16
9		59.	1. 31	57.	25. 55	55.	50. 28	54.	15. 11	52.	40. 4	51.	5. 7	49.	30. 21	47.	55. 45
10		46.	21. 21	44.	47. 8	43.	13. 7	41.	39. 18	40.	5. 41						
11										82.	2. 47	80.	39. 40	79.	16. 50	77.	54. 18
12	Fomal- haut	76.	32. 5	75.	10. 10	73.	48. 35	72.	27. 20	71.	6. 25	69.	45. 51	68.	25. 40	67.	5. 53
13		65.	46. 29	64.	27. 30	63.	8. 57	61.	50. 50	60.	33. 10						
14										85.	51. 14	84.	29. 56	83.	8. 48	81.	47. 51
15	Pegasi.	80.	27. 6	79.	6. 32	77.	46. 11	76.	26. 2	75.	6. 5	73.	46. 21	72.	26. 51	71.	7. 34
16		69.	48. 31	68.	29. 42	67.	11. 9	65.	52. 52	64.	34. 51	63.	17. 6	61.	59. 39	60.	42. 30
17	Pegasi.	59.	25. 40														
18		76.	59. 17	75.	33. 36	74.	7. 55	72.	42. 14	71.	16. 34	69.	50. 56	68.	25. 18	66.	59. 39
19		65.	34. 1	64.	8. 22	62.	42. 44	61.	17. 5	59.	51. 26	58.	25. 47	57.	0. 8	55.	34. 29

IX. OCTOBER 1787 [117]																	
Days	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.
19	α Pegasi.	54.	8. 50	52.	43. 10	51.	17. 31	49.	51. 52	48.	26. 16	47.	0. 42	45.	35. 11	44.	9. 46
20		42.	44. 27														
20		84.	16. 30	82.	45. 14	81.	13. 45	79.	42. 11	78.	10. 1	76.	37. 45	75.	5. 12	73.	32. 23
21	α Arietis.	71.	59. 16	70.	25. 51	68.	52. 8	67.	18. 6	65.	43. 45	64.	9. 5	62.	34. 5	60.	58. 45
22		59.	23. 5	57.	47. 4	56.	10. 43	54.	34. 2	52.	57. 1	51.	19. 39	49.	41. 57	48.	3. 54
23		46.	25. 31	44.	46. 48	43.	7. 45	41.	28. 22	39.	48. 39						
23										72.	40. 37	71.	0. 12	69.	19. 25	67.	38. 16
24	Aldebaran.	65.	56. 45	64.	14. 52	62.	32. 39	60.	50. 5	59.	7. 11	57.	23. 57	55.	40. 24	53.	56. 33
25		52.	12. 25	50.	28. 0	48.	43. 20	46.	58. 26	45.	13. 19	43.	27. 59	41.	42. 28	39.	56. 49
26		38.	11. 3	36.	25. 11	34.	39. 18	32.	53. 27	31.	7. 41	29.	22. 4	27.	36. 40	25.	51. 34
27		24.	6. 48														
27		65.	39. 8	63.	50. 46	62.	2. 21	60.	13. 53	58.	25. 22	56.	36. 49	54.	48. 15	52.	59. 43
28	Pollux.	51.	11. 14	49.	22. 47	47.	34. 28	45.	46. 16	43.	58. 13	42.	10. 21	40.	22. 46	38.	35. 26
29		36.	48. 24														
29		73.	4. 48	71.	14. 53	69.	25. 5	67.	35. 24	65.	45. 50	63.	56. 24	62.	7. 8	60.	18. 2
30	Regulus.	58.	29. 5	56.	40. 19	54.	51. 45	53.	3. 24	51.	15. 15	49.	27. 20	47.	39. 39	45.	52. 13
31		44.	5. 2	42.	18. 7	40.	31. 30	38.	45. 10	36.	59. 8	35.	13. 25	33.	28. 3	31.	43. 2
N I		29.	58. 22														
30																	
31	The Sun.	115.	9. 38	113.	29. 41	111.	49. 57	110.	10. 26	108.	31. 8	120.	10. 41	118.	30. 8	116.	49. 47
N I		101.	56. 16									106.	52. 3	105.	13. 13	103.	34. 38

Distances of γ 's Center from Sun, and from Stars west of her.

Days.	Stars Names.	Noon. D. M. S.	3 Hours. D. M. S.	6 Hours. D. M. S.	9 Hours. D. M. S.	12 Hours. D. M. S.	15 Hours. D. M. S.	18 Hours. D. M. S.	21 Hours. D. M. S.
1	α Arietis.	29. 58. 39	31. 43. 44	33. 28. 57	35. 14. 18	36. 59. 45	38. 45. 18	40. 30. 55	42. 16. 37
2		44. 2. 20	45. 48. 6	47. 33. 52	49. 19. 39	51. 5. 26	52. 51. 11	54. 36. 53	56. 22. 31
3		58. 8. 2							
3		25. 54. 41	27. 36. 33	29. 18. 45	31. 1. 15	32. 44. 1	34. 26. 57	36. 10. 3	37. 53. 19
4	Aldeba-	39. 36. 40	41. 20. 4	43. 3. 30	44. 46. 57	46. 30. 25	48. 13. 49	49. 57. 13	51. 40. 34
5	ran.	53. 23. 52	55. 7. 7	56. 50. 17	58. 33. 23	60. 16. 24	61. 59. 20	63. 42. 10	65. 24. 53
6		67. 7. 30							
6		25. 55. 29	27. 33. 29	29. 11. 48	30. 50. 26	32. 29. 24	34. 8. 34	35. 47. 55	37. 27. 25
7	Pollux.	39. 7. 0	40. 46. 37	42. 26. 15	44. 5. 54	45. 45. 32	47. 25. 6	49. 4. 35	50. 44. 0
8		52. 23. 21	54. 2. 36	55. 41. 44	57. 20. 45	58. 59. 39	60. 38. 25	62. 17. 2	63. 55. 30
9		65. 33. 48							
14		38. 54. 6	38. 54. 6	40. 16. 38	41. 39. 2	43. 1. 17	44. 23. 25	45. 45. 27	47. 7. 22
15		48. 29. 10	49. 50. 52	51. 12. 28	52. 33. 58	53. 55. 22	55. 16. 41	56. 37. 56	57. 59. 7
16		59. 20. 13	60. 41. 16	62. 2. 16	63. 23. 14	64. 44. 9	66. 5. 2	67. 25. 55	68. 46. 48
17	The Sun.	70. 7. 40	71. 28. 33	72. 49. 27	74. 10. 22	75. 31. 19	76. 52. 19	78. 13. 23	79. 34. 31
18		80. 55. 43	82. 17. 0	83. 38. 23	84. 59. 52	86. 21. 28	87. 43. 11	89. 5. 3	90. 27. 3
19		91. 49. 12	93. 11. 31	94. 34. 0	95. 56. 41	97. 19. 33	98. 42. 37	100. 5. 54	101. 29. 24
20		102. 53. 8	104. 17. 6	105. 41. 19	107. 5. 47	108. 30. 31	109. 55. 32	111. 20. 49	112. 46. 24
21		114. 12. 16	115. 38. 27	117. 4. 56	118. 31. 44	119. 58. 51			

XI. OCTOBER 1787. [119]

Stars Names.	Noon.	3 Hours.	6 Hours.	9 Hours.	12 Hours.	15 Hours.	18 Hours.	21 Hours.
	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
19	51. 29. 26	52. 59. 21	54. 29. 26	55. 59. 43	57. 30. 11	59. 0. 51	60. 31. 45	62. 2. 52
20	63. 34. 13	65. 5. 48	66. 37. 39	68. 9. 46	69. 42. 9	71. 14. 48	72. 47. 45	74. 21. 0
21	75. 54. 32	77. 28. 23	79. 2. 34	80. 37. 4	82. 11. 54	83. 47. 5	85. 22. 36	86. 58. 28
22	88. 34. 42	90. 11. 18	91. 48. 15	93. 25. 35	95. 3. 17			
23	52. 29. 6	53. 51. 48	55. 15. 28	56. 40. 3	47. 9. 20	48. 27. 30	49. 46. 53	51. 7. 26
24	63. 55. 30	65. 24. 52	66. 54. 56	68. 25. 39	58. 5. 30	59. 31. 49	60. 58. 56	62. 26. 51
25	76. 7. 50	77. 41. 48	79. 16. 13	80. 51. 4	69. 56. 58	71. 28. 52	73. 1. 20	74. 34. 20
26	41. 12. 12	42. 52. 43	44. 33. 58	46. 15. 53	34. 38. 48	36. 15. 41	37. 53. 35	39. 32. 27
27	54. 53. 33	56. 38. 22	58. 23. 31	60. 8. 57	47. 58. 26	49. 41. 31	51. 25. 5	53. 9. 6
28	45. 22. 48	27. 10. 18	28. 58. 13	30. 46. 28	18. 18. 38	20. 3. 41	21. 49. 24	23. 35. 46
29	39. 50. 12	41. 39. 12	43. 28. 10	45. 17. 8	32. 34. 58	34. 23. 37	36. 12. 22	38. 1. 14
30	54. 21. 1				47. 6. 4	48. 54. 56	50. 43. 43	52. 32. 25
31	22. 11. 46	23. 55. 25	25. 39. 27	27. 23. 52	29. 8. 39	30. 53. 42	32. 38. 53	34. 24. 12
N	36. 9. 96	37. 54. 58	39. 40. 17	41. 25. 33	43. 10. 45	44. 55. 50	46. 40. 46	48. 25. 33
	50. 10. 10							

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OCTOBER 1787.

XII.

Configurations of the SATELLITES of JUPITER
at Five o' Clock in the Morning.

1	10			2.	⊙		3.		4.
2				2.	⊙	.1			4.
3			3.		⊙		4.		
4			3.		⊙	4.	2.	.1	
5			3.		⊙				
6			4.		⊙	2.	3.		
7	4.				⊙		2.	3.	
8	4.				⊙	1.		3.	
9	4.			2.	⊙	3.			1.0
10		4.		1.	⊙		2.		
11			4.		⊙		2.		
12			3.	2.	⊙				
13				2.	⊙	3 6 4			
14				1.	⊙		2.	3 6 4	
15	20				⊙	1.		3.	4.
16			2.		⊙	3.			4.
17	10			3.	⊙	2.			4.
18			3.		⊙	1.	2.		4.
19			2.	2.	⊙			4.	
20	3.0			2.	⊙	1.			
21	40			1.	⊙		2.	3.	
22	20		4.		⊙		2.		
23		4.		2.	⊙		3.		
24	4.			3.	⊙	2.			10
25	4.		3.		⊙	1.	2.		
26	4.		3.		⊙				
27		4.		2.	⊙	1.			
28			4.		⊙		2.	3.	
29				4.	⊙	2.	1.	3.	
30			2.		⊙		4.		
31	2.0			3.	⊙	1.			

I. NOVEMBER 1787. [121]				
Days of the Month.	Days of the Week.	Sundays, Holidays, &c.	Phases of the Moon.	
			D. H. M.	
			Last Quarter	1. 22. 5
			New Moon	9. 9. 42
			First Quarter	17. 15. 7
			Full Moon	24. 16. 26
			Other Phenomena.	
			D. H. M.	
1	Th.	All Saints.	2. 13. 20	☾ ☿ ♏
2	F.	Pr. Edw. b. [Pr. Soph. b.	17. 54	☾ ☉ ♏
3	Sa.	On mor. of All Souls, 1 r.	3. 2. 48	☾ ☿ ♏
				☿ ☉ ♏ d. L. 8'
4	Su.	22d Sunday after Trinity.	4. 23. 46	☾ ☉ ♏
5	M.	Powder-Plot, 1605.	11. 6. 47	☾ ☿
6	Tu.	Leon ^d . M. Ter. begins.	12. 1. 20	☾ ☿ Ophiuchi.
7	W.	D. of Cumberland born.	13. 23. 26	☾ ☉ ♏
8	Th.	Prs. Aug. Sophia born.	14. 2. 1	☾ ☿ ♏
9	F.		18.	☿ ☉ Oph. d. L. 42'
10	Sa.		21. 20. 0	☉ enters ♏
			22. 0. 39	☾ ☿ ♏
11	Su.	23d Su. after Tr. St. Mart.	26. 1. 45	☾ ☿
12	M.	On mor. of St. M. 2 ret.	2 57	☾ 132 ☿
13	Tu.	Britius. [Camb. T. div. m.	11. 23	Im. of ☿ ♏ * 3' 1/2
14	W.			South of ☿'s center.
15	Th.	Machutus.	12. 30 1/2	Em. * 1' 1/2 S.
16	F.		15. 40 1/2	Im. of ☿ ♏ * 15' 1/2
17	Sa.	Hugh Bp. of Lincoln.		North of ☿'s center.
			15. 55	Em. * 16' N.
18	Su.	24th Sunday after Trin.	27. 5. 57	☾ ☿ ♏
19	M.	In 8 days of S. M. 3 ret.	28.	☿ Stationary.
20	Tu.	Edmund K. and Mart.		☿ Stationary.
21	W.		29. 19. 35	☾ ☿ ♏
22	Th.	Cecilia.	30. 0. 1	☾ ☉ ♏
23	F.	St. Clement.	8. 45	☾ ☿ ♏
24	Sa.			
		[born.		
25	Su.	25th Su. after Tr. D. of Gl.		
26	M.	In 15 days of S. Mart. 4		
27	Tu.	[ret.		
28	W.	Michaelmas Term ends.		
29	Th.			
30	F.	St. Andrew.		

[122] NOVEMBER 1787. II.

Days of the Month.	Days of the Week.	Sun's Longitude.				Sun's Right Asc. in Time.		Sun's Declin. South.		Equat. of Time. Sub.		Diff.
		S.	D.	M.	S.	H.	M.	S.	D.M.S.	M.	S.	
1	Th.	7.	9.	0.	28	14.	26.	27, 1	14.30.58	16.	14, 0	
2	F.	7.	10.	0.	38	14.	30.	23, 0	14.50. 3	16.	14, 7	0, 7
3	Sa.	7.	11.	0.	50	14.	34.	19, 7	15. 8.55	16.	14, 6	0, 1
4	Su.	7.	12.	1.	4	14.	38.	17, 3	15.27.33	16.	13, 6	1, 0
5	M.	7.	13.	1.	20	14.	42.	15, 7	15.45.55	16.	11, 7	1, 9
												2, 7
6	Tu.	7.	14.	1.	38	14.	46.	15, 0	16. 4. 1	16.	9, 0	
7	W.	7.	15.	1.	58	14.	50.	15, 1	16.21.51	16.	5, 5	3, 5
8	Th.	7.	16.	2.	20	14.	54.	16, 0	16.39.25	16.	1, 1	4, 4
9	F.	7.	17.	2.	44	14.	58.	17, 8	16.56.42	15.	55, 9	5, 2
10	Sa.	7.	18.	3.	10	15.	2.	20, 5	17.13.41	15.	49, 8	6, 1
												7, 0
11	Su.	7.	19.	3.	37	15.	6.	24, 0	17.30.23	15.	42, 8	
12	M.	7.	20.	4.	6	15.	10.	28, 4	17.46.47	15.	35, 0	7, 8
13	Tu.	7.	21.	4.	37	15.	14.	33, 6	18. 2.52	15.	26, 4	8, 6
14	W.	7.	22.	5.	9	15.	18.	39, 7	18.18.38	15.	16, 9	9, 5
15	Th.	7.	23.	5.	42	15.	22.	46, 6	18.34. 4	15.	6, 6	10, 3
												11, 2
16	F.	7.	24.	6.	17	15.	26.	54, 3	18.49.11	14.	55, 4	
17	Sa.	7.	25.	6.	53	15.	31.	2, 8	19. 3.57	14.	43, 4	12, 0
18	Su.	7.	26.	7.	30	15.	35.	12, 1	19.18.23	14.	30, 7	12, 7
19	M.	7.	27.	8.	8	15.	39.	22, 3	19.32.28	14.	17, 2	13, 5
20	Tu.	7.	28.	8.	47	15.	43.	33, 2	19.46.12	14.	2, 9	14, 3
												15, 1
21	W.	7.	29.	9.	27	15.	47.	45, 0	19.59.34	13.	47, 8	
22	Th.	8.	0.	10.	8	15.	51.	57, 4	20.12.34	13.	31, 9	15, 9
23	F.	8.	1.	10.	51	15.	56.	10, 7	20.25.11	13.	15, 2	16, 7
24	Sa.	8.	2.	11.	35	16.	0.	24, 8	20.37.26	12.	57, 7	17, 5
25	Su.	8.	3.	12.	20	16.	4.	39, 6	20.49.18	12.	39, 5	18, 2
												19, 0
26	M.	8.	4.	13.	6	16.	8.	55, 2	21. 0.46	12.	20, 5	
27	Tu.	8.	5.	13.	54	16.	13.	11, 5	21.11.51	12.	0, 8	19, 7
28	W.	8.	6.	14.	44	16.	17.	28, 5	21.22.32	11.	40, 4	20, 4
29	Th.	8.	7.	15.	35	16.	21.	46, 3	21.32.48	11.	19, 2	21, 2
30	F.	8.	8.	16.	27	16.	26.	4, 8	21.42.40	10.	57, 3	21, 9

III. NOVEMBER 1787. [123]

Days.	Semidia- meter of the Sun.	Time of D ^o passing the Meridian.	Hourly Motion of the Sun.	Logarithm of the Sun's Distance.	Place of the Moon's Node.
	M. S.	M. S.	M. S.		S. D. M.
1	16. 11, 1	1. 6, 9	2. 30, 3	9. 996274	8. 28. 33
7	16. 12, 5	1. 7, 6	2. 30, 8	9. 995651	8. 28. 14
13	16. 13, 8	1. 8, 3	2. 31, 2	9. 995056	8. 27. 54
19	16. 15, 0	1. 9, 0	2. 31, 7	9. 994493	8. 27. 35
25	16. 16, 1	1. 9, 6	2. 32, 0	9. 994000	8. 27. 16

Eclipses of the SATELLITES of J U P I T E R.

I. Satellite. Immerfions.		II. Satellite. Immerfions.		III. Satellite.	
Days	H. M. S.	Days	H. M. S.	Days	H. M. S.
*1	12. 40. 9	*1	8. 27. 50	*6	10. 1. 7 I
3	7. 8. 33	4	21. 46. 12	*6	12. 32. 43 E
5	1. 36. 55	*8	11. 4. 25	*13	13. 59. 13 I
6	20. 5. 15	12	0. 22. 28	*13	16. 32. 4 E
*8	14. 33. 32	*15	13. 40. 22	*20	17. 56. 44 I
*10	9. 1. 47	19	2. 58. 8	20	20. 30. 48 E
12	3. 29. 59	*22	16. 15. 46	27	21. 53. 44 I
13	21. 58. 9	26	5. 33. 18	28	0. 29. 1 E
*15	16. 26. 16	*29	18. 50. 44	IV. Satellite. Conj.	
*17	10. 54. 22			*6	9. 44 Sup.
19	5. 22. 24			*14	15. 27 Inf.
20	23. 50. 25			23	0. 26 Sup.
*22	18. 18. 24				
*24	12. 46. 20				
*26	7. 14. 15				
28	1. 42. 7				
29	20. 9. 58				

[124] NOVEMBER 1787. IV.

Days.	Heliocen- tric Lon- gitude.	Heliocen- tric Lati- tude.	Geocen- tric Lon- gitude.	Geocen- tric La- titude.	Declina- tion.	Passage over Merid.
	S. D. M.	D. M.	S. D. M.	D. M.	D. M.	H. M.

M E R C U R Y. Gr. Elong. 19^d.

1	9. 5. 31	5. 21 S	7. 26. 2	1. 53 S	21. 6 S	1. 7
4	9. 14. 14	5. 58	8. 0. 19	2. 8	22. 19	1. 12
7	9. 23. 19	6. 28	8. 4. 30	2. 20	23. 21	1. 18
10	10. 2. 53	6. 49	8. 8. 32	2. 29	24. 12	1. 23
13	10. 13. 4	7. 0	8. 12. 23	2. 35	24. 51	1. 28
16	10. 24. 1	6. 56	8. 15. 57	2. 35	25. 18	1. 31
19	11. 5. 53	6. 35	8. 19. 8	2. 30	25. 31	1. 32
22	11. 18. 50	5. 53	8. 21. 44	2. 17	25. 29	1. 31
25	0. 3. 2	4. 46	8. 23. 30	1. 55	25. 13	1. 26
28	0. 18. 35	3. 13	8. 24. 5	1. 20	24. 40	1. 17
30	0. 29. 43	1. 57	8. 23. 39	0. 50	24. 9	1. 6

V E N U S.

1	7. 17. 31	1. 33 N	7. 12. 36	0. 39 N	15. 1 S	0. 15
7	7. 27. 5	1. 2	7. 20. 8	0. 26	17. 23	0. 21
13	8. 6. 38	0. 29 N	7. 27. 39	0. 12 N	19. 28	0. 27
19	8. 16. 10	0. 5 S	8. 5. 11	0. 2 S	21. 14	0. 34
25	8. 25. 40	0. 39	8. 12. 43	0. 17	22. 37	0. 40

M A R S.

1	2. 14. 43	0. 50 N	3. 22. 51	1. 22 N	22. 52 N	17. 12
7	2. 17. 45	0. 55	3. 24. 32	1. 35	22. 48	16. 55
13	2. 20. 46	1. 0	3. 25. 50	1. 50	22. 48	16. 36
19	2. 23. 45	1. 5	3. 26. 44	2. 5	22. 52	16. 15
25	2. 26. 42	1. 9	3. 27. 15	2. 21	23. 2	15. 52

J U P I T E R.

1	2. 17. 56	0. 28 S	2. 26. 8	0. 33 S	22. 52 N	15. 14
7	2. 18. 27	0. 28	2. 25. 44	0. 33	22. 51	14. 48
13	2. 18. 58	0. 27	2. 25. 13	0. 32	22. 50	14. 22
19	2. 19. 29	0. 26	2. 24. 37	0. 32	22. 49	13. 55
25	2. 20. 0	0. 26	2. 23. 56	0. 31	22. 48	13. 27

S A T U R N. $\square$ 14^d. 11^h $\frac{1}{2}$

1	10. 27. 56	1. 29 S	10. 22. 17	1. 31 S	15. 32 S	7. 13
7	10. 28. 8	1. 29	10. 22. 23	1. 31	15. 30	6. 50
13	10. 28. 19	1. 30	10. 22. 32	1. 30	15. 26	6. 26
19	10. 28. 31	1. 30	10. 22. 45	1. 30	15. 22	6. 2
25	10. 28. 42	1. 31	10. 23. 1	1. 30	15. 16	5. 38

V. NOVEMBER 1787. [125]

Days of the Month.	Days of the Week.	Moon's Longitude at Noon.	Moon's Longitude at Midnight.	Moon's Latitude at Noon.	Moon's Latitude at Midn.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
1	Th.	3. 27. 3. 26	4. 4. 4. 40	2. 33. 59 S	3. 5. 41 S
2	F.	4. 11. 2. 18	4. 17. 56. 19	3. 34. 19	3. 59. 36
3	Sa.	4. 24. 46. 39	5. 1. 33. 29	4. 21. 11	4. 38. 55
4	Su.	5. 8. 16. 44	5. 14. 56. 36	4. 52. 36	5. 2. 13
5	M.	5. 21. 33. 1	5. 28. 6. 11	5. 7. 42	5. 9. 5
6	Tu.	6. 4. 36. 3	6. 11. 2. 43	5. 6. 29	4. 59. 58
7	W.	6. 17. 26. 13	6. 23. 46. 36	4. 49. 46	4. 36. 2
8	Th.	7. 0. 3. 55	7. 6. 18. 16	4. 19. 4	3. 59. 4
9	F.	7. 12. 29. 37	7. 18. 38. 11	3. 36. 25	3. 11. 21
10	Sa.	7. 24. 43. 56	8. 0. 47. 9	2. 44. 16	2. 15. 27
11	Su.	8. 6. 47. 55	8. 12. 46. 31	1. 45. 17	1. 14. 5
12	M.	8. 18. 43. 16	8. 24. 38. 26	0. 42. 12 S	0. 9. 57 S
13	Tu.	9. 0. 32. 25	9. 6. 25. 38	0. 22. 19 N	0. 54. 20 N
14	W.	9. 12. 18. 33	9. 18. 11. 43	1. 25. 45	1. 56. 18
15	Th.	9. 24. 5. 36	10. 0. 0. 55	2. 25. 42	2. 53. 39
16	F.	10. 5. 58. 8	10. 11. 58. 1	3. 19. 54	3. 44. 9
17	Sa.	10. 18. 1. 5	10. 24. 8. 3	4. 6. 7	4. 25. 32
18	Su.	11. 0. 19. 27	11. 6. 35. 58	4. 42. 6	4. 55. 32
19	M.	11. 12. 58. 2	11. 19. 26. 14	5. 5. 34	5. 11. 54
20	Tu.	11. 26. 0. 54	0. 2. 42. 22	5. 14. 15	5. 12. 26
21	W.	0. 9. 30. 48	0. 16. 26. 14	5. 6. 12	4. 55. 26
22	Th.	0. 23. 28. 32	1. 0. 37. 26	4. 40. 5	4. 20. 8
23	F.	1. 7. 52. 22	1. 15. 12. 44	3. 55. 45	3. 27. 11
24	Sa.	1. 22. 37. 38	2. 0. 6. 7	2. 54. 49	2. 19. 10
25	Su.	2. 7. 37. 7	2. 15. 9. 28	1. 40. 53	1. 0. 42 N
26	M.	2. 22. 42. 2	3. 0. 13. 39	0. 19. 23 N	0. 22. 12 S
27	Tu.	3. 7. 43. 20	3. 15. 10. 3	1. 3. 15 S	1. 42. 58
28	W.	3. 22. 33. 6	3. 29. 51. 46	2. 20. 38	2. 55. 38
29	Th.	4. 7. 5. 33	4. 14. 14. 8	3. 27. 25	3. 55. 34
30	F.	4. 21. 17. 14	4. 28. 14. 47	4. 19. 45	4. 39. 47

[126] NOVEMBER 1787. VI.

Days of the Month.	Days of the Week.	D's Age.	D's Pass- age over Merid.	D's Right Ascen. at Noon.	D's Right Asc. at Midn.	D's De- clination at Noon.	D's De- clination at Midn.
			H. M.	D. M.	D. M.	D. M.	D. M.
1	Th.	23	18. 7	118. 35	125. 39	18. 15 N	16. 15 N
2	F.	24	18. 58	132. 29	139. 8	14. 2	11. 40
3	Sa.	25	19. 46	145. 36	151. 55	9. 10	6. 35
4	Su.	26	20. 32	158. 6	164. 12	3. 57 N	1. 17 N
5	M.	27	21. 17	170. 13	176. 12	1. 21 S	3. 58 S
6	Tu.	28	22. 3	182. 11	188. 10	6. 31	8. 58
7	W.	29	22. 49	194. 11	200. 16	11. 19	13. 31
8	Th.	30	23. 36	206. 24	212. 36	15. 33	17. 24
9	F.	1	0	218. 53	225. 14	19. 2	20. 27
10	Sa.	2	0. 24	231. 39	238. 7	21. 38	22. 33
11	Su.	3	1. 14	244. 38	251. 9	23. 12	23. 35
12	M.	4	2. 4	257. 40	264. 9	23. 41	23. 31
13	Tu.	5	2. 53	270. 35	276. 57	23. 5	22. 24
14	W.	6	3. 41	283. 14	289. 26	21. 28	20. 18
15	Th.	7	4. 27	295. 32	301. 34	18. 55	17. 20
16	F.	8	5. 12	307. 30	313. 22	15. 34	13. 38
17	Sa.	9	5. 56	319. 11	324. 58	11. 33	9. 19
18	Su.	10	6. 39	330. 44	336. 31	6. 58	4. 31 S
19	M.	11	7. 23	342. 21	348. 15	1. 59 S	0. 36 N
20	Tu.	12	8. 9	354. 15	0. 24	3. 13 N	5. 51
21	W.	13	8. 57	6. 42	13. 13	8. 28	11. 1
22	Th.	14	9. 49	19. 57	26. 56	13. 27	15. 46
23	F.	15	10. 45	34. 10	41. 40	17. 52	19. 43
24	Sa.	16	11. 46	49. 25	57. 23	21. 16	22. 28
25	Su.	17	12. 50	65. 32	73. 46	23. 16	23. 39
26	M.	18	13. 55	82. 2	90. 15	23. 35	23. 6
27	Tu.	19	14. 57	98. 20	106. 15	22. 11	20. 54
28	W.	20	15. 55	113. 57	121. 24	19. 16	17. 20
29	Tu.	21	16. 48	128. 35	135. 32	15. 10	12. 49
30	F.	22	17. 38	142. 16	148. 47	10. 19	7. 43

VII. NOVEMBER 1787. [127]

Days of the Month.	Days of the Week.	Semid ^r . D at Noon.	Semid ^r . D at Midnight.	Hor. Par. D at Noon.	Hor. Par. D at Midnight.	Propert. Lo- gar. at Noon.	Propert. Lo- gar. at Midn.
		M. S.	M. S.	M. S.	M. S.		
1	Th.	16. 41	16. 6	59. 22	59. 6	4817	4837
2	F.	16. 2	15. 57	58. 49	58. 31	4858	4880
3	Sa.	15. 52	15. 47	58. 14	57. 56	4901	4923
4	Su.	15. 43	15. 38	57. 39	57. 22	4945	4966
5	M.	15. 34	15. 29	57. 6	56. 50	4986	5006
6	Tu.	15. 25	15. 21	56. 34	56. 19	5027	5046
7	W.	15. 17	15. 13	56. 4	55. 49	5065	5085
8	Th.	15. 9	15. 6	55. 36	55. 23	5102	5119
9	F.	15. 2	14. 59	55. 11	55. 0	5134	5149
10	Sa.	14. 56	14. 54	54. 50	54. 40	5162	5175
11	Su.	14. 52	14. 50	54. 32	54. 25	5186	5195
12	M.	14. 48	14. 47	54. 19	54. 15	5203	5209
13	Tu.	14. 46	14. 46	54. 12	54. 11	5213	5214
14	W.	14. 46	14. 47	54. 12	54. 15	5213	5209
15	Th.	14. 49	14. 51	54. 21	54. 29	5201	5190
16	F.	14. 54	14. 57	54. 39	54. 52	5177	5159
17	Sa.	15. 1	15. 6	55. 7	55. 25	5140	51. 6
18	Su.	15. 12	15. 18	55. 45	56. 8	5090	5060
19	M.	15. 25	15. 32	56. 33	56. 59	5028	4995
20	Tu.	15. 39	15. 47	57. 26	57. 54	4961	4926
21	W.	15. 55	16. 2	58. 23	58. 52	4890	4854
22	Th.	16. 10	16. 17	59. 19	59. 45	4821	4789
23	F.	16. 23	16. 29	60. 9	60. 30	4760	4735
24	Sa.	16. 34	16. 38	60. 48	61. 2	4714	4697
25	Su.	16. 40	16. 42	61. 11	61. 16	4686	4680
26	M.	16. 42	16. 40	61. 16	61. 11	4680	4686
27	Tu.	16. 38	16. 34	61. 2	60. 49	4697	4712
28	W.	16. 30	16. 25	60. 33	60. 14	4732	4754
29	Th.	16. 19	16. 13	59. 53	59. 30	4779	4808
30	F.	16. 7	16. 0	59. 7	58. 42	4835	4866

Distances of D's Center from Sun, and from Stars east of her.

Days.	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D. M. S.		D. M. S.		D. M. S.		D. M. S.		D. M. S.		D. M. S.		D. M. S.		D. M. S.	
1	Regulus.	29. 58. 26		28. 14. 9		26. 30. 22		24. 47. 6		23. 4. 26		21. 22. 24		19. 41. 3		18. 0. 27	
2		16. 20. 39															
1		101. 56. 18		100. 18. 13		98. 40. 22		97. 2. 46		95. 25. 24		93. 48. 17		92. 11. 25		90. 34. 48	
2		88. 58. 26		87. 22. 19		85. 46. 28		84. 10. 52		82. 35. 31		81. 0. 25		79. 25. 34		77. 50. 58	
3	The Sun.	76. 16. 36		74. 42. 29		73. 8. 37		71. 35. 0		70. 1. 37		68. 28. 28		66. 55. 34		65. 22. 54	
4		63. 50. 28		62. 18. 16		60. 46. 18		59. 14. 33		57. 43. 2		56. 11. 45		54. 40. 42		53. 9. 52	
5		51. 39. 16		50. 8. 52		48. 38. 41		47. 8. 43		45. 38. 58		44. 9. 26		42. 40. 7		41. 11. 1	
6		39. 42. 9															
11		83. 50. 40		82. 29. 37		81. 8. 45		79. 48. 4		78. 27. 34		77. 7. 16		75. 47. 10		74. 27. 16	
12	Fomal-	73. 7. 35		71. 48. 8		70. 28. 55		69. 9. 58		67. 51. 16		66. 32. 50		65. 14. 42		63. 56. 52	
13	haut.	62. 39. 20		61. 22. 8		60. 5. 17		58. 48. 48		57. 32. 43		56. 17. 2		55. 1. 47		53. 46. 59	
14		52. 32. 39															
14		69. 1. 31		67. 36. 8		66. 10. 48		64. 45. 31		63. 20. 16		61. 55. 4		60. 29. 55		59. 4. 49	
15		57. 39. 47		56. 14. 49		54. 49. 54		53. 25. 3		52. 0. 15		50. 35. 30		49. 10. 51		47. 46. 19	
16	α Pegasi.	46. 21. 54		44. 57. 35		43. 33. 24		42. 9. 24		40. 45. 36		39. 22. 2		37. 58. 43		36. 35. 41	
17		35. 12. 57															
17		76. 11. 56		74. 41. 10		73. 10. 12		71. 39. 0		70. 7. 33		68. 35. 51		67. 3. 54		65. 31. 41	
18	α Arietis.	63. 59. 12		62. 26. 26		60. 53. 22		59. 20. 0		57. 46. 21		56. 12. 23		54. 38. 6		53. 3. 29	

IX. NOVEMBER 1787. [129]																	
Days.	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.	D.	M. S.
19	α Arietis.	51.	28. 33	49.	53. 17	48.	17. 41	46.	41. 45	45.	5. 29	43.	28. 53	41.	51. 57	40.	14. 41
20		38.	37. 4														
20	Aldebaran.	71.	31. 23	69.	52. 58	68.	14. 8	66.	34. 54	64.	55. 16	63.	15. 13	61.	34. 45	59.	53. 53
21		58.	12. 37	56.	30. 56	54.	48. 52	53.	6. 25	51.	23. 35	49.	40. 22	47.	56. 47	46.	12. 51
22		44.	28. 34	42.	43. 57	40.	59. 4	39.	13. 55	37.	28. 31	35.	42. 51	33.	57. 3	32.	11. 9
23		30.	25. 14	28.	39. 21	26.	53. 34	25.	7. 56	23.	22. 30						
23	Pollux.	57.	34. 10	55.	44. 2	53.	53. 45	52.	3. 21	50.	12. 52	48.	22. 19	46.	31. 44	44.	41. 12
24		42.	50. 43	41.	0. 18	39.	10. 8	37.	20. 2	35.	30. 18	33.	40. 56	31.	52. 0	30.	3. 34
25		28.	15. 39														
26		64.	11. 16	62.	18. 19	60.	25. 27	58.	32. 42	56.	40. 5	54.	47. 37	52.	55. 20	51.	3. 14
27	Regulus.	49.	11. 21	47.	19. 42	45.	28. 19	43.	37. 13	41.	46. 25	39.	55. 57	38.	15. 49	36.	16. 3
28		34.	26. 41	32.	37. 43	30.	49. 12	29.	1. 10	27.	13. 42	25.	26. 51	23.	40. 37	21.	55. 3
29		20.	10. 12														
29	Spica ♀	73.	42. 21	71.	54. 47	70.	7. 35	68.	20. 45	66.	34. 18	64.	48. 13	63.	2. 31	61.	17. 11
30		59.	32. 14	57.	47. 39	56.	3. 27	54.	19. 38	52.	36. 11	50.	53. 7	49.	10. 26	47.	28. 8
D. 1		45.	46. 13														
29	The Sun.	120.	6. 23	118.	26. 19	116.	46. 38	115.	7. 19	113.	28. 22	111.	49. 47	110.	11. 34	108.	33. 43
30		106.	56. 14	105.	19. 7	103.	42. 22	102.	6. 0	100.	30. 0	98.	54. 22	97.	19. 6	95.	44. 12
D. 1		94.	9. 41														

Distances of γ 's Center from Sun, and from Stars west of her.

Days.	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	
1	Aldeba- ran.	50. 10. 7	51. 54. 36	53. 38. 52	55. 22. 56	57. 6. 48	57. 6. 48	58. 50. 28	60. 33. 56	62. 17. 12							
2		64. 0. 15	65. 43. 5	67. 25. 42	69. 8. 5	70. 50. 15	72. 32. 11	74. 13. 52	75. 55. 38								
3		77. 36. 30															
4	Pollux.	36. 8. 12	37. 46. 57	39. 25. 27	41. 4. C	42. 42. 30	44. 20. 55	45. 59. 15	47. 37. 29								
5		49. 15. 37	50. 53. 38	52. 31. 32	54. 9. 16	55. 46. 50	57. 24. 16	59. 1. 32	60. 38. 38								
6		62. 15. 33															
7	Regulus.	25. 15. 32	26. 51. 54	28. 28. 11	30. 4. 28	31. 40. 39	33. 16. 46	34. 52. 48	36. 28. 44								
8		38. 4. 33	39. 40. 14	41. 15. 47	42. 51. 13	44. 26. 30	46. 1. 38	47. 36. 37	49. 11. 26								
9		50. 46. 7	52. 20. 39	53. 55. 1	55. 29. 14	57. 3. 18											
13	The Sun.	39. 27. 53	40. 48. 46	42. 9. 36	43. 30. 24	44. 51. 11	46. 11. 58	47. 32. 44	48. 53. 30								
14		50. 14. 17	51. 35. 5	52. 55. 55	54. 16. 46	55. 37. 39	56. 58. 34	58. 19. 32	59. 40. 34								
15		61. 1. 39	62. 22. 49	63. 44. 4	65. 5. 25	66. 26. 51	67. 48. 23	69. 10. 3	70. 31. 51								
16		71. 53. 46	73. 15. 50	74. 38. 4	76. 0. 29	77. 23. 4	78. 45. 50	80. 8. 47	81. 31. 57								
17		82. 55. 19	84. 18. 54	85. 42. 44	87. 6. 49	88. 31. 8	89. 56. 42	91. 20. 33	92. 45. 41								
18		94. 11. 6	95. 36. 49	97. 2. 51	98. 29. 13	99. 55. 54	101. 22. 55	102. 50. 1	104. 18. 0								
19		105. 45. 4	107. 14. 30	108. 43. 19	110. 12. 32	111. 42. 7	113. 12. 7	114. 42. 30	116. 13. 18								
20		117. 44. 31	119. 16. 9	120. 48. 13													

XI. NOVEMBER 1787. [131]

Day.	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
17		83. 56. 18		85. 29. 34		87. 3. 9		88. 37. 3		77. 46. 8		79. 18. 15		80. 50. 39		82. 23. 20	
18	Antares.	96. 31. 34								90. 11. 17		91. 45. 51		93. 20. 45		94. 55. 59	
19																	
20		48. 13. 11		49. 30. 44		50. 49. 21		52. 9. 0		53. 29. 39		54. 51. 16		56. 13. 49		57. 37. 16	
21	α Aquilæ.	59. 1. 34		60. 26. 40		61. 52. 35		63. 19. 15		64. 46. 40		66. 14. 48		67. 43. 38		69. 13. 9	
22		70. 43. 28		72. 14. 9		73. 45. 34		75. 17. 34		76. 50. 9		78. 23. 17		79. 56. 56		81. 31. 7	
23		83. 5. 46															
24		35. 18. 48		36. 55. 36		38. 33. 27		40. 12. 18		41. 52. 7		43. 32. 49		45. 14. 22		46. 56. 43	
25	α Pegasi.	48. 39. 46		50. 23. 29		52. 7. 50		53. 52. 47		55. 38. 17		57. 24. 19		59. 10. 49		60. 57. 46	
26		62. 45. 7															
27		19. 8. 21		20. 55. 28		22. 43. 25		24. 32. 8		26. 21. 30		28. 11. 29		30. 2. 0		31. 52. 59	
28	α Arietis.	33. 44. 19		35. 35. 53		37. 27. 41		39. 19. 42		41. 11. 53		43. 4. 11		44. 56. 34		46. 49. 1	
29		48. 41. 31		50. 34. 2		52. 26. 33		54. 18. 59		56. 11. 21							
30																	
31	Aldebaran.	31. 8. 32		32. 57. 43		34. 47. 2		36. 36. 24		38. 25. 47		40. 15. 6		42. 4. 17		43. 53. 21	
32		45. 42. 16		47. 30. 59		49. 19. 28		51. 7. 44		52. 55. 45		54. 43. 31		56. 31. 0		58. 18. 11	
33		60. 5. 5		61. 51. 41		63. 37. 57		65. 23. 52		67. 9. 27							
34																	
35																	
36																	
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131																	

[132] NOVEMBER 1787. XII.

Configurations of the SATELLITES of JUPITER
at Eleven o' Clock at Night.

1	20			⊙	1.		
2	1.0		2.3	⊙			
3				⊙	3.3		
4				⊙	1.	2.	3.
5			2.1.	⊙		4.	3.
6	30			⊙	1.		
7		304		⊙			
8				⊙	2.1.		
9		203		⊙			
10				⊙	3.3		10
11				⊙	1.	2.	3.
12			102	⊙			3.
13				⊙	3.	1.	
14				⊙		2.	
15				⊙	2.1.	4.	
16				⊙			4.
17	10 2.0			⊙	3.		4.
18				⊙	1.	2.	3.
19			102	⊙			3.
20				⊙	3.		4.
21			3.1.	⊙		4.	
22				⊙	102.		
23				⊙			
24	2.0			⊙	1.		3.0
25				⊙		2.	3.
26			102	⊙			3.
27				⊙	1.	2.	
28			103	⊙			
29				⊙	1.	2.	
30				⊙			

I. DECEMBER 1787. [133]

Days of the Month.	Days of the Week.	Sundays, Holidays, &c.	Phases of the Moon.
			D.H.M.
			Last Quarter — 1. 8. 6
			New Moon — 9. 4. 11
			First Quarter — 17. 8. 6
			Full Moon — 24. 3. 14
			Last Quarter — 30. 26. 56
			Other Phenomena.
			D.H.M.
			2. 5. 11 ☾ e ☉
			☽ 9 d. Lat. 28'
			7. 15. 59 ☾ m
			9. ☽ eclipsed, invisible.
			10. 9. 31 ☾ 2
			18. ☽ Stationary.
			19. 10. 29 ☾ w ☿
			21. 8. 22 ☽ enters w
			23. 7. 17 ☾ 1
			14. 11 ☾ 132 ☽
			23. 32 ☾ n ♀
			24. 2. 27 ☾ 14 ♀
			☾ eclips. partly visible.
			18. 16½ Im. of ☾ * 11'
			N. of ☽'s cent.
			18. 46 Em. * 15' N.
			27. 4. 20 ☾ e ☉
			8. 37 ☾ o ☉
			17. 0 ☾ n ☉
			29. 10. 54 Em. of e ☉ * 1'
			N. of ☽'s cent.
			31. ☽ Serp. d. Lat. 48'
			☽ 1 m. diff. Lat. 37'

[134] DECEMBER 1787. H.						
Days of the Month.	Days of the Week.	Sun's Longitude.	Sun's Right Asc. in Time.	Sun's Declin. South.	Equat. of Time. Sub.	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M. S.	S.
1	Sa.	8. 9.17.20	16.30.23,9	21.52. 7	10.34,9	23,2
2	Su.	8. 10.18.15	16.34.43,7	22. 1. 9	10.11,7	23,8
3	M.	8. 11.19.11	16.39. 4,1	22. 9.45	9.47,9	24,4
4	Tu.	8. 12.20. 9	16.43.25,2	22.17.56	9.23,5	25,0
5	W.	8. 13.21. 8	16.47.46,8	22.25.41	8.58,5	25,6
6	Th.	8. 14.22. 9	16.52. 9,0	22.33. c	8.32,9	26,2
7	F.	8. 15.23.11	16.56.31,8	22.39.52	8. 6,7	26,7
8	Sa.	8. 16.24.14	17. 0.55,1	22.46.17	7.40,0	27,1
9	Su.	8. 17.25.18	17. 5.18,8	22.52.16	7.12,9	27,5
10	M.	8. 18.26.22	17. 9.42,9	22.57.47	6.45,4	27,9
11	Tu.	8. 19.27.27	17.14. 7,4	23. 2.51	6.17,5	28,2
12	W.	8. 20.28.33	17.18.32,4	23. 7.27	5.49,3	28,6
13	Th.	8. 21.29.39	17.22.57,6	23.11.36	5.20,7	28,9
14	F.	8. 22.30.46	17.27.23,1	23.15.17	4.51,8	29,1
15	Sa.	8. 23.31.53	17.31.48,9	23.18.30	4.22,7	29,4
16	Su.	8. 24.33. 0	17.36.14,9	23.21.15	3.53,3	29,6
17	M.	8. 25.34. 8	17.40.41,1	23.23.32	3.23,7	29,7
18	Tu.	8. 26.35.16	17.45. 7,5	23.25.21	2.54,0	29,8
19	W.	8. 27.36.24	17.49.34,0	23.26.42	2.24,2	29,9
20	Th.	8. 28.37.32	17.54. 0,5	23.27.34	1.54,3	29,9
21	F.	8. 29.38.40	17.58.27,0	23.27.58	1.24,4	30,0
22	Sa.	9. 0.39.48	18. 2.53,5	23.27.54	0.54,4	29,9
23	Su.	9. 1.40.56	18. 7.20,1	23.27.21	0.24,5	29,9
24	M.	9. 2.42. 5	18.11.46,7	23.26.20	Ad:5,4	29,9
25	Tu.	9. 3.43.14	18.16.13,2	23.24.51	0.35,3	29,8
26	W.	9. 4.44.23	18.20.39,6	23.22.54	1. 5,1	29,7
27	Th.	9. 5.45.33	18.25. 5,9	23.20.28	1.34,8	29,5
28	F.	9. 6.46.43	18.29.32,0	23.17.34	2. 4,3	29,3
29	Sa.	9. 7.47.53	18.33.57,9	23.14.12	2.33,6	29,0
30	Su.	9. 8.49. 4	18.38.23,6	23.10.22	3. 2,6	28,8
31	M.	9. 9.50.15	18.42.49,1	23. 6. 5	3.31,4	

III. DECEMBER 1787. [135]

Days of the Month.	Semidia- meter of the Sun.	Time of D ^o passing the Meridian.	Hourly Motion of the Sun.	Logarithm of the Sun's Distance.	Place of the Moon's Node.
	M. S.	M. S.	M. S.		S. D. M.
1	16. 17. 1	1. 10. 2	2. 32. 2	9. 993595	8. 26. 57
7	16. 17. 9	1. 10. 7	2. 32. 5	9. 993268	8. 26. 38
13	16. 18. 5	1. 11. 0	2. 32. 7	9. 992991	8. 26. 19
19	16. 19. 0	1. 11. 1	2. 32. 8	9. 992776	8. 26. 0
25	16. 19. 2	1. 11. 2	2. 32. 9	9. 992653	8. 25. 41

ECLIPSES of the SATELLITES of JUPITER.

I. Satellite. Immerfions.		II. Satellite. Immerfions.		III. Satellite.	
Days	H. M. S.	Days	H. M. S.	Days	H. M. S.
*1	14. 37. 49	*3	8. 8. 3	5	1. 50. 8 I
*3	9. 5. 37	6	21. 25. 15	5	4. 26. 41 E
5	3. 33. 23	*10	10. 42. 22	*12	5. 46. 12 I
6	22. 1. 7		Emerfions.	*12	8. 23. 58 E
*8	16. 28. 50	14	2. 39. 42	*19	9. 42. 6 I
*10	10. 56. 32	*17	15. 56. 52	*19	12. 21. 5 E
*12	5. 24. 14	*21	5. 14. 3	*26	13. 37. 59 I
	Emerfions.	24	18. 31. 16	*26	16. 18. 13 E
14	2. 2. 30	*28	7. 48. 32	IV. Satellite. Conj.	
15	20. 30. 13	31	21. 5. 54		
*17	14. 57. 55				
*19	9. 25. 38				
21	3. 53. 21				
22	22. 21. 4			*1	5. 43 Inf.
*24	16. 48. 46			*9	14. 25 Sup.
*26	11. 16. 30			17	19. 37 Inf.
*28	5. 44. 16			26	4. 20 Sup.
30	0. 12. 3				
31	18. 39. 49				

[136] DECEMBER 1787. IV.

Days.	Heliocentric Longitude. S. D. M.	Heliocentric Latitude. D. M.	Geocentric Longitude. S. D. M.	Geocentric Latitude. D. M.	Declination. D. M.	Passage over Merid. H. M.
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Inf. $\delta 7^d. 14^h$. MERCURY. Greatest El. 28^d .

1	1. 5. 28	1. 16 S	8. 23. 10	0. 33 S	23. 50 S	0. 59
4	1. 23. 30	0. 56 N	8. 20. 36	0. 25 N	22. 43	0. 36
7	2. 12. 16	3. 8	8. 16. 49	1. 26	21. 23	0. 6
10	3. 1. 11	5. 0	8. 12. 45	2. 15	20. 8	23. 28
13	3. 19. 35	6. 17	8. 9. 35	2. 46	19. 11	23. 3
16	4. 6. 56	6. 55	8. 8. 0	2. 56	18. 46	22. 45
19	4. 22. 55	6. 57	8. 7. 58	2. 51	18. 51	22. 34
22	5. 7. 27	6. 31	8. 9. 14	2. 36	19. 18	22. 27
25	5. 20. 38	5. 45	8. 11. 28	2. 15	19. 58	22. 23
28	6. 2. 39	4. 48	8. 14. 23	1. 50	20. 43	22. 23
31	6. 13. 39	3. 44	8. 17. 44	1. 25	21. 30	22. 25

VENUS.

1	9. 5. 11	1. 11 S	8. 20. 15	0. 31 S	23. 37 S	0. 47
7	9. 14. 40	1. 41	8. 27. 47	0. 45	24. 11	0. 54
13	9. 24. 9	2. 9	9. 5. 19	0. 57	24. 18	1. 1
19	10. 3. 38	2. 33	9. 12. 50	1. 8	23. 59	1. 7
25	10. 13. 7	2. 53	9. 20. 21	1. 18	23. 13	1. 13

MARS.

1	2. 29. 38	1. 14 N	3. 27. 17	2. 37 N	23. 18 N	15. 26
7	3. 2. 32	1. 18	3. 26. 48	2. 54	23. 40	14. 58
13	3. 5. 25	1. 22	3. 25. 49	3. 11	24. 8	14. 28
19	3. 8. 16	1. 25	3. 24. 22	3. 27	24. 40	13. 55
25	3. 11. 7	1. 29	3. 22. 29	3. 42	25. 14	13. 20

JUPITER. $\delta 13^d. 1^h$.

1	2. 20. 31	0. 25 S	2. 23. 11	0. 31 S	22. 47 N	12. 57
7	2. 21. 2	0. 24	2. 22. 23	0. 30	22. 45	12. 28
13	2. 21. 33	0. 24	2. 21. 34	0. 29	22. 43	11. 58
19	2. 22. 4	0. 23	2. 20. 45	0. 28	22. 41	11. 28
25	2. 22. 35	0. 22	2. 19. 58	0. 27	22. 38	10. 58

SATURN.

1	10. 28. 53	1. 31 S	10. 23. 20	1. 29 S	15. 9 S	5. 13
7	10. 29. 5	1. 31	10. 23. 43	1. 28	15. 1	4. 49
13	10. 29. 16	1. 31	10. 24. 9	1. 28	14. 52	4. 24
19	10. 29. 28	1. 32	10. 24. 38	1. 27	14. 42	3. 59
25	10. 29. 39	1. 32	10. 25. 9	1. 27	14. 31	3. 35

V. DECEMBER 1787. [137]					
Days of the Month.	Days of the Week.	Moon's Longitude at Noon.	Moon's Longitude at Midnight.	Moon's Latitude at Noon.	Moon's Latitude at Midn.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
1	Sa.	5. 5. 6.45	5. 11.53.19	4.55.31 S	5. 6. 54 S
2	Su.	5. 18.34.31	5. 25.10.41	5.13.56	5. 16. 43
3	M.	6. 1.41.59	6. 8. 8.48	5.15.21	5. 10. 1
4	Tu.	6. 14.31.20	6. 20.50. 2	5. 0.53	4.48.11
5	W.	6. 27. 5. 5	7. 3.16.56	4.32.10	4.13. 4
6	Th.	7. 9.25.45	7. 15.31.57	3.51.11	3.26. 48
7	F.	7. 21.35.42	7. 27.37.22	3. 0.14	2. 31. 47
8	Sa.	8. 3.37. 6	8. 9.35.15	2. 1.47	1.30. 35
9	Su.	8. 15.31.55	8. 21.27.28	0.58.29 S	0. 25.51 S
10	M.	8. 27.22. 2	9. 3.16. 0	0. 6.59 N	0. 39.41 N
11	Tu.	9. 9. 9.31	9. 15. 3. 1	1.11.57	1.43. 25
12	W.	9. 20.56.40	9. 26.50.58	2.13.51	2.42. 51
13	Th.	10. 2.46.10	10. 8.42.48	3.10.13	3.35. 37
14	F.	10. 14.41.11	10. 20.41.56	3.58.48	4.19. 31
15	Sa.	10. 26.45.22	11. 2.52.10	4.37.29	4.52. 29
16	Su.	11. 9. 2.42	11. 15.17.36	5. 4.16	5.12. 36
17	M.	11. 21.37.19	11. 28. 2.20	5.17.17	5.18. 7
18	Tu.	0. 4.33. 6	0. 11.10. 2	5.14.52	5. 7.28
19	W.	0. 17.53.29	0. 24.43.42	4.55.45	4.39.40
20	Th.	1. 1.40.42	1. 8.44.36	4.19.16	3.54.35
21	F.	1. 15.55. 8	1. 23.12. 4	3.25.54	2.53. 28
22	Sa.	2. 0.34.46	2. 8. 2.36	2.17.43	1.39.11
23	Su.	2. 15.34.39	2. 23. 9.53	0.58.37 N	0.16.42 N
24	M.	3. 0.47. 9	3. 8.25.14	0.25.41 S	1. 7.40 S
25	Tu.	3. 16. 2.43	3. 23.38.28	1.48.22	2.25. 58
26	W.	4. 1.11.14	4. 8.39.57	3. 2.44	3.35. 1
27	Th.	4. 16. 3.43	4. 23.21.44	4. 3.19	4.27. 16
28	F.	5. 0.33.27	5. 7.38.33	4.46.36	5. 1.14
29	Sa.	5. 14.36.43	5. 21.28. 2	5.11.10	5.16. 27
30	Su.	5. 28.12.32	6. 4.50.29	5.17.15	5.13. 47
31	M.	6. 11.22. 9	6. 17.48. 1	5. 6.18	4.55. 3

[138] D E C E M B E R 1787. VI.

Days of the Month.	Days of the Week.	D's Age.	D's Passage over Merid.	D's Right Ascens. at Noon.	D's Right Ascens. at Midn.	D's Declination at Noon.	D's Declination at Midn.
			H. M.	D. M.	D. M.	D. M.	D. M.
1	Sa.	23	18. 24	155. 8	161. 21	5. 4 N	2. 23 N
2	Su.	24	19. 10	167. 27	173. 29	0. 18 S	2. 56 S
3	M.	25	19. 55	179. 28	185. 25	5. 30	7. 58
4	Tu.	26	20. 40	191. 23	197. 24	10. 20	12. 35
5	W.	27	21. 26	203. 27	209. 33	14. 40	16. 35
6	Th.	28	22. 13	215. 44	222. 0	18. 18	19. 48
7	F.	29	23. 2	228. 20	234. 44	21. 5	22. 7
8	Sa.	30	23. 51	241. 11	247. 40	22. 53	23. 24
9	Su.	1	0	254. 10	260. 40	23. 39	23. 37
10	M.	2	0. 40	267. 8	273. 33	23. 19	22. 46
11	Tu.	3	1. 28	279. 53	286. 8	21. 57	20. 54
12	W.	4	2. 14	292. 17	298. 21	19. 38	18. 9
13	Th.	5	2. 59	304. 18	310. 10	16. 28	14. 38
14	F.	6	3. 43	315. 58	321. 42	12. 38	10. 30
15	Sa.	7	4. 26	327. 23	333. 4	8. 15	5. 54
16	Su.	8	5. 8	338. 44	344. 27	3. 29 S	1. 0 S
17	M.	9	5. 51	350. 13	356. 5	1. 32 N	4. 5 N
18	Tu.	10	6. 36	2. 5	8. 13	6. 37	9. 8
19	W.	11	7. 24	14. 34	21. 8	11. 35	13. 55
20	Th.	12	8. 16	27. 57	35. 2	16. 7	18. 8
21	F.	13	9. 13	42. 23	50. 1	19. 54	21. 23
22	Sa.	14	10. 15	57. 54	65. 59	22. 32	23. 18
23	Su.	15	11. 19	74. 13	82. 32	23. 39	23. 34
24	M.	16	12. 23	90. 51	99. 5	23. 2	22. 5
25	Tu.	17	13. 25	107. 10	115. 4	20. 43	18. 59
26	W.	18	14. 23	122. 44	130. 8	16. 57	14. 39
27	Th.	19	15. 16	137. 17	144. 12	12. 10	9. 32
28	F.	20	16. 6	150. 55	157. 27	6. 49	4. 3 N
29	Sa.	21	16. 53	163. 50	170. 5	1. 17 N	1. 28 S
30	Su.	22	17. 39	176. 15	182. 21	4. 8 S	6. 44
31	M.	23	18. 25	188. 25	194. 30	9. 12	11. 32

VH. DECEMBER 1787 [139]

Days of the Month.	Days of the Week.	Semidr. D at Noon. M. S.	Semidr. D at Midnight. M. S.	Hor. Par. D at Noon. M. S.	Hor. Par. D at Midnight. M. S.	Proport. Le- gar. at Noon.	Proport. Le- gar. at Midn.
1	Sa.	15. 53	15. 46	58. 17	57. 53	4897	4927
2	Su.	15. 40	15. 34	57. 29	57. 7	4957	4985
3	M.	15. 28	15. 23	56. 46	56. 26	5012	5037
4	Tu.	15. 18	15. 13	56. 7	55. 50	5062	5084
5	W.	15. 8	15. 4	55. 34	55. 19	5104	5124
6	Th.	15. 1	14. 58	55. 6	54. 54	5141	5157
7	F.	14. 55	14. 52	54. 44	54. 35	5170	5182
8	Sa.	14. 50	14. 48	54. 27	54. 20	5193	5202
9	Su.	14. 47	14. 46	54. 15	54. 11	5209	5214
10	M.	14. 45	14. 45	54. 8	54. 6	5218	5221
11	Tu.	14. 44	14. 45	54. 5	54. 6	5222	5221
12	W.	14. 45	14. 46	54. 9	54. 13	5217	5211
13	Th.	14. 48	14. 50	54. 19	54. 27	5203	5193
14	F.	14. 53	14. 56	54. 37	54. 49	5179	5163
15	Sa.	15. 0	15. 4	55. 3	55. 18	5145	5125
16	Su.	15. 9	15. 15	55. 36	55. 57	5102	5075
17	M.	15. 21	15. 28	56. 20	56. 45	5045	5013
18	Tu.	15. 35	15. 42	57. 11	57. 38	4980	4946
19	W.	15. 50	15. 58	58. 7	58. 36	4910	4874
20	Th.	16. 6	16. 14	59. 5	59. 34	4838	4802
21	F.	16. 21	16. 28	60. 1	60. 26	4770	4740
22	Sa.	16. 34	16. 39	60. 48	61. 7	4714	4691
23	Su.	16. 43	16. 46	61. 22	61. 32	4673	4661
24	M.	16. 47	16. 47	61. 37	61. 37	4656	4656
25	Tu.	16. 46	16. 43	61. 32	61. 22	4661	4673
26	W.	16. 39	16. 34	61. 7	60. 49	4691	4712
27	Th.	16. 28	16. 22	60. 27	60. 3	4739	4768
28	F.	16. 14	16. 7	59. 36	59. 8	4800	4834
29	Sa.	15. 59	15. 51	58. 39	58. 10	4870	4906
30	Su.	15. 43	15. 36	57. 42	57. 15	4941	4975
31	M.	15. 29	15. 22	56. 50	56. 25	5006	5028

[X. DECEMBER 1787. [141]

Days	Stars Names.	Noon.	3 Hours.	6 Hours.	9 Hours.	12 Hours.	15 Hours.	18 Hours.	21 Hours.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
21	Pollux.	64. 10. 54	62. 23. 47	60. 36. 18	58. 48. 28	57. 0. 17	55. 11. 47	53. 23. 2	51. 34. 1
22		49. 44. 45	47. 55. 15	46. 5. 35	44. 15. 48	42. 25. 54	40. 35. 56	38. 45. 58	36. 56. 0
23		35. 6. 3							
23		71. 18. 41	69. 25. 10	67. 31. 29	65. 37. 39	63. 43. 40	61. 49. 34	59. 55. 23	58. 1. 9
24	Regulus.	56. 6. 51	54. 12. 32	52. 18. 15	50. 24. 0	48. 29. 49	46. 35. 43	44. 41. 46	42. 47. 58
25		40. 54. 20	39. 0. 54	37. 7. 44	35. 14. 51	33. 22. 16	31. 30. 1	29. 38. 10	27. 46. 49
26		25. 56. 1	24. 5. 50	22. 16. 21	20. 27. 36	18. 39. 39			
26						72. 8. 12	70. 16. 50	68. 25. 52	66. 35. 17
27	Spica π	64. 45. 5	62. 55. 17	61. 5. 53	59. 16. 54	57. 28. 20	55. 40. 11	53. 52. 28	52. 5. 11
28		50. 18. 21	48. 31. 57	46. 46. 0	45. 0. 31	43. 15. 29	41. 30. 55	39. 46. 50	38. 3. 13
29		36. 20. 5							
29		81. 50. 8	80. 7. 11	78. 24. 41	76. 42. 37	75. 0. 59	73. 19. 47	71. 39. 1	69. 58. 40
30	Antares.	68. 18. 44	66. 39. 13	65. 0. 6	63. 21. 22	61. 43. 2	60. 5. 5	58. 27. 31	56. 50. 19
31		55. 13. 30							
28						119. 31. 15	117. 54. 3	116. 17. 18	114. 41. 0
29		113. 5. 8	111. 29. 42	109. 54. 42	108. 20. 9	106. 46. 2	105. 12. 21	103. 39. 4	102. 6. 13
30	The Sun.	100. 33. 47	99. 1. 46	97. 30. 8	95. 58. 54	94. 28. 3	92. 57. 35	91. 27. 30	89. 57. 47
31		88. 28. 26	86. 59. 26	85. 30. 46	84. 2. 27	82. 34. 28	81. 6. 49	79. 39. 28	78. 12. 26
J. 1		76. 45. 41							

XI. DECEMBER 1787. [143]

Days.	Stars Names.	Noon.		3 Hours.		6 Hours.		9 Hours.		12 Hours.		15 Hours.		18 Hours.		21 Hours.	
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
17	α Aquilæ.	66. 21. 6	67. 47. 10	69. 13. 51	70. 41. 8	82. 39. 26	60. 43. 16	62. 6. 43	63. 30. 51	64. 55. 39	65. 36. 1	66. 12. 32	67. 12. 32	68. 35. 57	69. 52. 4	70. 54. 34. 52	71. 54. 34. 52
18		78. 6. 6	79. 36. 42	81. 7. 49	82. 39. 26	83. 39. 26	72. 9. 1	73. 37. 28	75. 6. 28	76. 36. 1	77. 36. 1	78. 36. 1	79. 36. 1	80. 36. 1	81. 36. 1	82. 36. 1	83. 36. 1
19		42. 50. 2	44. 28. 25	46. 7. 39	47. 47. 41	48. 47. 41	36. 25. 44	38. 0. 20	39. 35. 57	40. 12. 32	41. 12. 32	42. 12. 32	43. 12. 32	44. 12. 32	45. 12. 32	46. 12. 32	47. 12. 32
20	α Pegasi.	56. 18. 18	58. 2. 21	59. 46. 58	61. 32. 9	62. 32. 9	49. 28. 28	51. 9. 56	52. 52. 4	53. 52. 4	54. 52. 4	55. 52. 4	56. 52. 4	57. 52. 4	58. 52. 4	59. 52. 4	60. 52. 4
21		26. 49. 19	28. 38. 24	30. 28. 9	32. 18. 30	34. 18. 30	19. 40. 45	21. 26. 36	23. 13. 21	25. 0. 57	26. 0. 57	27. 0. 57	28. 0. 57	29. 0. 57	30. 0. 57	31. 0. 57	32. 0. 57
22		41. 36. 52	43. 29. 36	45. 22. 37	47. 15. 53	49. 15. 53	34. 9. 21	36. 0. 38	37. 52. 20	39. 44. 26	41. 44. 26	43. 44. 26	45. 44. 26	47. 44. 26	49. 44. 26	51. 44. 26	53. 44. 26
23	α Arietis.	56. 44. 52	58. 2. 21	59. 46. 58	61. 32. 9	62. 32. 9	49. 28. 28	51. 9. 56	52. 52. 4	53. 52. 4	54. 52. 4	55. 52. 4	56. 52. 4	57. 52. 4	58. 52. 4	59. 52. 4	60. 52. 4
24		24. 26. 12	26. 16. 16	28. 6. 50	29. 57. 51	31. 57. 51	31. 49. 16	33. 41. 0	35. 32. 59	37. 25. 9	38. 25. 9	39. 25. 9	40. 25. 9	41. 25. 9	42. 25. 9	43. 25. 9	44. 25. 9
25		39. 17. 27	41. 9. 47	43. 2. 7	44. 54. 25	46. 54. 25	46. 46. 40	48. 38. 48	50. 30. 48	52. 22. 38	53. 22. 38	54. 22. 38	55. 22. 38	56. 22. 38	57. 22. 38	58. 22. 38	59. 22. 38
26	Aldebaran..	54. 14. 17	56. 5. 42	57. 56. 52	59. 47. 47	61. 47. 47	61. 38. 25	63. 28. 46	65. 18. 48	67. 8. 30	68. 8. 30	69. 8. 30	70. 8. 30	71. 8. 30	72. 8. 30	73. 8. 30	74. 8. 30
27		68. 57. 51	70. 47. 51	72. 37. 51	74. 27. 51	76. 17. 51	76. 17. 51	78. 7. 51	80. 0. 51	81. 0. 51	82. 0. 51	83. 0. 51	84. 0. 51	85. 0. 51	86. 0. 51	87. 0. 51	88. 0. 51
28		27. 51. 27	29. 35. 47	31. 20. 14	33. 4. 44	35. 4. 44	34. 49. 15	36. 33. 44	38. 18. 8	40. 2. 25	41. 2. 25	42. 2. 25	43. 2. 25	44. 2. 25	45. 2. 25	46. 2. 25	47. 2. 25
29	Pollux.	41. 46. 31	43. 30. 22	45. 13. 56	46. 57. 14	48. 57. 14	48. 40. 16	50. 22. 58	52. 5. 20	53. 47. 20	54. 47. 20	55. 47. 20	56. 47. 20	57. 47. 20	58. 47. 20	59. 47. 20	60. 47. 20
30		55. 28. 57	57. 18. 57	59. 8. 57	61. 8. 57	63. 8. 57	63. 8. 57	65. 8. 57	67. 8. 57	68. 8. 57	69. 8. 57	70. 8. 57	71. 8. 57	72. 8. 57	73. 8. 57	74. 8. 57	75. 8. 57
31		18. 34. 29	20. 13. 58	21. 53. 25	23. 32. 48	25. 32. 48	25. 12. 8	26. 51. 21	28. 30. 23	30. 9. 14	31. 9. 14	32. 9. 14	33. 9. 14	34. 9. 14	35. 9. 14	36. 9. 14	37. 9. 14
1	Regulus.	31. 47. 50	33. 26. 8	35. 4. 9	36. 41. 54	38. 41. 54	38. 19. 21	39. 56. 29	41. 33. 17	43. 9. 47	44. 9. 47	45. 9. 47	46. 9. 47	47. 9. 47	48. 9. 47	49. 9. 47	50. 9. 47
2		44. 45. 59	46. 21. 53	47. 57. 29	49. 32. 47	51. 32. 47	51. 7. 47	52. 42. 30	54. 16. 55	55. 51. 3	56. 51. 3	57. 51. 3	58. 51. 3	59. 51. 3	60. 51. 3	61. 51. 3	62. 51. 3
3		57. 24. 54	59. 4. 54	61. 4. 54	63. 4. 54	65. 4. 54	65. 4. 54	67. 4. 54	69. 4. 54	71. 4. 54	72. 4. 54	73. 4. 54	74. 4. 54	75. 4. 54	76. 4. 54	77. 4. 54	78. 4. 54

[144] DECEMBER 1787. XII.

Configurations of the SATELLITES of JUPITER at
Ten o'Clock at Night.

1			2 6 3	⊙	4	
2				⊙	2 6 3	
3	1 0 2 0			⊙		3 4
4				⊙		3 4
5			1 6 3	⊙	2	4
6		3		⊙	2	4
7		3	2 1	⊙		4
8			2 6 3	⊙	1 4	
9				⊙	2 6 3	
10				⊙	1 6 2	3
11	1 0	4		⊙		3
12	4		1 3	⊙	2	
13	4	3		⊙	1 2	
14	4	3	1 6 2	⊙		
15		4	2 6 3	⊙	1	
16		4		⊙	2 6 3	
17				⊙	1 6 2	3
18	1 0		2	⊙	4 3	
19	2 0 3 0		1	⊙		4
20		3		⊙	1 2	4
21		3	1 6 2	⊙		4
22			2 6 3	⊙		4
23				⊙	3 2	4
24				⊙	1 6 2	3 4
25		2		⊙	4 3	
26	1 0 2 0		4	⊙		
27		4 3		⊙	1 2	
28		4 3	1 2	⊙		
29	4		3 2	⊙	1	
30	4			⊙	3 2	
31	4			⊙	1 6 2	3

GEORGIAN PLANET.

1786.	Days.	Heliocentric		Geocentric		Declin.	Passage Merid.
		Long.	Lat.	Long.	Lat.		
		S. D. M.	D. M.	S. D. M.	D. M.		
January. 8 8 ^d . 10 ^h	1	3. 18. 51	0. 27 N.	3. 19. 16	0. 29 N.	22. 33 N.	12. 32
	16	3. 19. 2	0. 27	3. 18. 37	0. 29	22. 39	11. 24
February.	1	3. 19. 14	0. 27	3. 17. 58	0. 29	22. 44	10. 15
	16	3. 19. 25	0. 28	3. 17. 27	0. 29	22. 48	9. 13
March.	1	3. 19. 35	0. 28	3. 17. 7	0. 29	22. 50	8. 23
	16	3. 19. 46	0. 28	3. 16. 55	0. 28	22. 52	7. 27
April. □ 6 ^d . 3 ^h	1	3. 19. 58	0. 28	3. 16. 55	0. 28	22. 52	6. 29
	16	3. 20. 9	0. 28	3. 17. 7	0. 28	22. 50	5. 35
May.	1	3. 20. 21	0. 28	3. 17. 30	0. 28	22. 47	4. 40
	16	3. 20. 32	0. 28	3. 18. 4	0. 27	22. 42	3. 45
June.	1	3. 20. 44	0. 28	3. 18. 49	0. 27	22. 36	2. 43
	16	3. 20. 55	0. 28	3. 19. 38	0. 27	22. 29	1. 45
July. 6 13 ^d . 3 ^h	1	3. 21. 6	0. 29	3. 20. 31	0. 27	22. 21	0. 47
	16	3. 21. 17	0. 29	3. 21. 26	0. 27	22. 12	23. 46
August.	1	3. 21. 29	0. 29	3. 22. 24	0. 27	22. 3	22. 47
	16	3. 21. 40	0. 29	3. 23. 15	0. 28	21. 55	21. 53
September.	1	3. 21. 52	0. 29	3. 24. 4	0. 28	21. 47	20. 58
	16	3. 22. 4	0. 29	3. 24. 43	0. 28	21. 40	20. 7
October. □ 18 ^d . 6 ^h	1	3. 22. 15	0. 29	3. 25. 12	0. 29	21. 36	19. 15
	16	3. 22. 26	0. 29	3. 25. 30	0. 29	21. 33	18. 21
November.	1	3. 22. 38	0. 30	3. 25. 36	0. 30	21. 32	17. 20
	16	3. 22. 49	0. 30	3. 25. 29	0. 30	21. 34	16. 19
December.	1	3. 23. 0	0. 30	3. 25. 11	0. 31	21. 38	15. 15
	16	3. 23. 12	0. 30	3. 24. 42	0. 31	21. 43	14. 7
	31	3. 23. 23	0. 30	3. 24. 7	0. 32	21. 50	12. 58

G E O R G I A N P L A N E T.

1787.	Days.	Heliocentric		Geocentric		Declin.	Passage
		Long.	Lat.	Long.	Lat.		Merid.
		S. D. M.	D. M.	S. D. M.	D. M.	D. M.	H. M.
January. 8 13 ^d . 44 ^h .	1	3. 23. 24	0. 30 N.	3. 24. 4	0. 32 N.	21. 51 N.	12. 53
	16	3. 23. 35	0. 30	3. 23. 25	0. 32	21. 57	11. 46
February.	1	3. 23. 47	0. 30	3. 22. 45	0. 32	22. 4	10. 36
	16	3. 23. 58	0. 30	3. 22. 11	0. 32	22. 10	9. 35
March.	1	3. 24. 8	0. 30	3. 21. 49	0. 32	22. 13	8. 44
	16	3. 24. 19	0. 31	3. 21. 33	0. 31	22. 15	7. 48
April. □ 11 ^d . 12 ^h .	1	3. 24. 31	0. 31	3. 21. 29	0. 31	22. 16	6. 49
	16	3. 24. 42	0. 31	3. 21. 37	0. 31	22. 14	5. 55
May.	1	3. 24. 53	0. 31	3. 21. 57	0. 30	22. 11	5. 0
	16	3. 25. 5	0. 31	3. 22. 28	0. 30	22. 5	4. 4
June.	1	3. 25. 17	0. 31	3. 23. 10	0. 30	21. 58	3. 3
	16	3. 25. 28	0. 31	3. 23. 57	0. 30	21. 50	2. 5
July. ♂ 18 ^d . 5 ^h .	1	3. 25. 39	0. 31	3. 24. 49	0. 30	21. 41	1. 6
	16	3. 25. 50	0. 31	3. 25. 44	0. 30	21. 31	0. 9
August.	1	3. 26. 2	0. 32	3. 26. 43	0. 30	21. 20	23. 6
	16	3. 26. 14	0. 32	3. 27. 35	0. 30	21. 10	22. 13
September.	1	3. 26. 26	0. 32	3. 28. 27	0. 31	21. 0	21. 18
	16	3. 26. 37	0. 32	3. 29. 8	0. 31	20. 52	20. 27
October. □ 23 ^d . 24 ^h .	1	3. 26. 48	0. 32	3. 29. 41	0. 31	20. 45	19. 35
	16	3. 27. 0	0. 32	4. 0. 3	0. 32	20. 41	18. 41
November.	1	3. 27. 12	0. 32	4. 0. 13	0. 33	20. 39	17. 41
	16	3. 27. 23	0. 32	4. 0. 10	0. 33	20. 41	16. 40
December.	1	3. 27. 34	0. 33	3. 29. 56	0. 34	20. 44	15. 36
	16	3. 27. 46	0. 33	3. 29. 30	0. 34	20. 50	14. 28
	31	3. 27. 58	0. 33	3. 28. 58	0. 34	20. 57	13. 19

EXPLANATION and USE OF THE ARTICLES

CONTAINED IN THE

ASTRONOMICAL and NAUTICAL EPHEMERIS.

IT may be proper first to premise, that all the Calculations of the Ephemeris are made according to apparent Time by the Meridian of the Royal Observatory at Greenwich: And the Sun's, Planet's, and Moon's Places, with the Particulars depending on them in the 2d, 4th, 5th, 6th, and 7th Pages of each Month, are computed to the Instant of apparent Noon, or that of the Sun's Center passing the Meridian of Greenwich.

Apparent Time, at any Place, is that deduced immediately from the Sun, whether from the Observation of his passing the Meridian, from his Altitude observed at a Distance from the Meridian, or from his observed Rising or Setting. This Time is different from that shewn by Clocks and Watches well regulated at Land, which is called equated or mean Time. This will be explained when we come to treat of the Equation of Time.

The Day is here supposed, according to the Method of Astronomers, to begin at Noon, or 12 Hours later than the civil Day of the same Denomination, and to be counted up to 24 Hours or the succeeding Noon, when the next Day begins. Thus the Day of the Month and the Hour of the Day are the same in this Method as in the civil Account at Noon, and from Noon till Midnight; but from Midnight till Noon they differ; for whereas in the civil Account a fresh Day is

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supposed to begin at Midnight, and the Hours to begin over again, in this Method the Day is still continued beyond Midnight, and the Reckoning of the Hours is continued up to 24. Thus the Distances put down to January 10, 15 Hours belong to January 11 at Three in the Morning by civil Reckoning.

There are 12 Pages for every Month. The first Column of the first Page of each Month contains the Day of the Month; the second, the Day of the Week expressed concisely by the initial Letter or Letters, *Su.* standing for Sunday, *M.* for Monday, *Tu.* for Tuesday, *W.* for Wednesday, *Th.* for Thursday, *F.* for Friday, and *Sa.* for Saturday: The third Column exhibits the Sundays and Festivals of the Church of England, and other remarkable Days: The last Column shews at Top the Moon's Phases, or the Times of New and Full Moon, and of the first and last Quarter or two Quadratures with the Sun: Beneath are contained miscellaneous Phænomena, namely, Eclipses of the Sun and Moon, and Occultations of Planets or fixt Stars not less than the fourth Magnitude, by the Moon, as they should happen at Greenwich by the Tables; the Conjunctions of the Moon with all Stars not less than the fourth Magnitude, which can be Occultations any where on the Globe, between the Latitudes of 60° North and 40° South: The Entrance of the Sun into the several Signs, and any other remarkable Phænomena.

The Stars are expressed by Bayer's Characters of Reference. The Conjunction of the Moon or a Planet with a Star is denoted by prefixing the Character of the Moon or Planet to that of the Star, the Time of the Conjunction being placed immediately after. The Case is the same with respect to the Occultation of a Star or Planet by the Moon, only this is further distinguished by the Addition of *Im.* or Immersion, to signify the Disappearance behind the Moon; and *Em.* or Emerision to signify the Re-appearance of the same. Thus $8^d. \text{D } 9 \text{ } \vee \text{ } 16^h. 22'$, signifies that the Moon will be in Conjunction with the Star $9 \text{ } \vee$ on the Eighth Day at $16^h. 22'$, exclusive of Parallax: And $10^d. \text{D } \varepsilon \text{ } \Pi \text{ } \text{Imm. } 9^h. 14'$. *Em.* $10^h. 23'$ signifies that the Moon will eclipse $\varepsilon \text{ } \Pi$ on the 10th Day, the Immersion being at $9^h. 14'$, and the Emerision at $10^h. 23'$, apparent Time at Greenwich.

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The Occultations set down are those only visible at Greenwich; the Circumstances of which will commonly not differ very widely in most Parts of the Kingdom; but in very distant Places they will differ very much, owing to the Change of the Moon's Parallax, or it may become no Occultation at all: The like may be said of Eclipses of the Sun.

An Eclipse of the Sun, or Occultation of a fixt Star by the Moon, if observed in a Place whose Latitude and Longitude are well determined, may be applied to the Correction of the Lunar Tables; but if made in a Place whose Latitude only is well known, may be applied to the Determination of the Longitude of the Place; but for this Purpose an accurate Calculation must be made of the Moon's Parallaxes in Longitude and Latitude, which makes this Method of settling the Longitudes of Places, though a very accurate one, less convenient in use for Persons not much versed in astronomical Calculations. However, this ought not to discourage Travellers or Mariners from endeavouring to make these Observations as often and as carefully as possible, when they shall happen to be at any Place whose Longitude they have Reason to think has not been well settled; since the necessary Calculations may be made at any Time afterwards by themselves, at Leisure, or referred to the Skill of Astronomers and Mathematicians.

Eclipses of the Moon are not liable to this Inconvenience; the Longitude of any Place, where the Eclipse has been observed, being deduced immediately by taking the Difference of the Time of the Observation and that set down in the Ephemeris, and converting it into Degrees, at the Rate of 15° to one Hour, &c. or more briefly by Table XIV. p. 38 of the 2d Edition of the Tables requisite to be used with the Ephemeris. But, as the Beginning or Ending of an Eclipse of the Moon cannot be generally observed nearer than One Minute, and sometimes Two or Three Minutes of Time, the Longitudes of Places cannot be certainly determined by this Method from a single Observation of the Beginning or End nearer than a Degree. Even this Point of Exactness will often be of great Service. If both the Beginning and End of the Eclipse be observed, a greater Degree of Exactness will be attained.

The Conjunctions of the Moon with the Planets, or fixt Stars not less than the fourth Magnitude, which may prove Occultations in some inhabited Parts of the Globe, are evidently designed to instruct Mariners or Travellers to look out frequently for such Observations; which if they happen to prove Occultations, and are carefully observed, will afford a certain Means of determining the Longitude of the Place of Observation.

The Two first Columns of the Second Page of the Month contain the Day of the Month and Week as before; next follow the Sun's Longitude, right Ascension in Time, Declination, and the Equation of Time with its Difference from Day to Day.

The Longitude of the Sun is made use of in most of the succeeding Calculations of the Ephemeris, and may serve either to verify them, or to make other similar Calculations at a different Time of the Day. Particularly it may serve, with the Help of the Moon's Longitude, to find the Distance of the Moon from the Sun at any Time, independent of the Distances contained in the 8th, 9th, 10th, and 11th Pages of the Month. To find the Sun's Longitude at any Time different from Noon, Proportion must be made according to its daily Increase: Saying, as 24^h . is to the Hour from Noon reckoned by the Meridian of Greenwich, so is the daily Variation of the Sun's Longitude, to a fourth Number; which added to the Sun's Longitude at the preceding Noon, gives the true Longitude at the given Time.

If the Time given be that of a Meridian different from Greenwich, it must be first reduced thereto, by adding or subtracting the Difference of Longitude turned into Time (at the Rate of One Hour to 15° . and One Minute of Time to 15 Minutes, or more briefly by Table XIV. p. 38, of the Requisite Tables) according as the Place is to the West or to the East of Greenwich. Example: Suppose any one should want to know the Sun's Longitude, January 19, 1767, at $4^h. 35'$, being in $21^\circ. 15'$, Longitude East of Greenwich. The Difference of Longitude turned into Time is $1^h. 25'$, which subtracted from $4^h. 35'$, because the Place is East of Greenwich, leaves $3^h. 10'$, for the Time reduced to the Meridian of Greenwich. The Sun's Longitude the preceding

ceding Noon is $9^{\circ}. 29'. 18''. 2''$, and the following Noon is $10^{\circ}. 6'. 19'. 4''$. the Difference is, $1^{\circ}. 1'. 2''$, or $61'. 2''$, the daily Variation. Then say, as 24^h . is to $3^h. 10'$, so is $61'. 2''$, to $8'. 3''$, which added to $9^{\circ}. 29'. 18''. 2''$, the Sun's Longitude on the preceding Noon, gives $9^{\circ}. 29'. 26'. 5''$, the Sun's Longitude at the Time given. In like Manner any other of the following Articles is to be found by the Help of the Ephemeris.

The Sun's Longitude serves also to compute the Aberration of the fixt Stars and Planets

The Sun's right Ascension in Time is useful to the practical Astronomer in regular Observatories, who adjusts his Clocks by sidereal Time. It is also useful to him for converting apparent into sidereal Time; as suppose that of an Eclipse of Jupiter's Satellites, in order to know at what Time it may be expected to happen by his Clocks: For this Purpose the Sun's right Ascension at the preceding Noon, together with the Increase of right Ascension from Noon, must be added to the apparent Time of the Phænomenon set down in the Ephemeris.

The Sun's right Ascension in Time serves also to compute the apparent Time of a known Star's passing the Meridian: Thus, subtract the Sun's right Ascension in Time at Noon from the Star's right Ascension in Time, the Remainder is the apparent Time of the Star's passing the Meridian nearly; from which the proportional Part of the daily Increase of the Sun's right Ascension for this apparent Time from Noon being subtracted, leaves the correct Time of the Star's passing the Meridian.

Hence the apparent Time may be found from an observed Altitude of a known fixt Star, suppose one contained in Page 7, of the Requisite Tables; as will be explained hereafter.

The Sun's right Ascension in Time is also useful for computing the Time of the Moon and Planets passing the Meridian, as will be shewn under their proper Articles.

The Sun's Declination is necessary to find the Latitude. whether at Sea or Land, from the Meridian Altitude observed; it is also requisite for finding the Latitude from Two Altitudes observed with the Interval of Time measured by a Watch; it serves for computing the Sun's Azimuth, having his Altitude and the Latitude of the Place given, in order
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to find the Variation of the Compass; it is required, jointly with the Latitude of the Place and the Sun's horary Angle; to compute his Altitude, if neglected to be observed at the Time of taking the Moon's Distance from the Sun for finding the Longitude, being useful to facilitate the Calculation of the Effect of Refraction and Parallax upon the Distance; it is also necessary to calculate the apparent Time from an observed Altitude of the Sun at a Distance from the Meridian, the Latitude being given; or to compute the Time of the Sun's Setting or Rising; which, though a less accurate Method than the former of obtaining the Time, may yet be useful when that cannot be had. For any of these Purposes the Sun's Declination must be found to the Time given nearly reduced to the Meridian of Greenwich, making Proportion according to the daily Increase or Decrease, in like Manner as was shewn with respect to the Sun's Longitude.

The Equation of Time is a Correction, which added to or subtracted from the apparent Time (according to its Title at the Top of the Column) gives equated or mean Time, or that which should be shown by a good Clock or Watch. Apparent Time is that which takes its Beginning from the Passage of the Sun's Center over the Meridian of any Place; and had the Sun no Motion in the Ecliptic, or was his Motion reduced to the Equator or in right Ascension uniform, he would always return to the Meridian after equal Intervals of Time. But his apparent Motion in the Ecliptic being continually varying, and his Motion in right Ascension being rendered further unequal on account of the Obliquity of the Ecliptic to the Equator, from these Causes it arises that the Intervals of his Return to the Meridian become unequal, and the Sun will gradually come too slow or too soon to the Meridian for an equable Motion, such as that of Clocks and Watches ought to be.

This Retardation or Acceleration of the Sun's coming to the Meridian is called the Equation of Time, and is contained in the last Column but One of Page 2d; and when applied according to its Title to the apparent Time, or that deduced immediately from the Sun, gives the mean or equated Time, whence the Error of a Clock or Watch may be found, and, if required, it may be corrected.

If it be proposed to convert mean Time into apparent, this is done by a contrary Process, by applying the Equation of Time to the mean Time given, with its Title or Sign changed; viz. subtracting instead of adding, and adding instead of subtracting.

The Equation of Time being set down in the Ephemeris for Noon at Greenwich, Proportion must be made, according to the daily Difference, to find what it should be at any given Time reduced to the same Meridian, as in the preceding Articles. The last Column of this Page, containing the daily Differences of the Equation, is designed for this Purpose.

As often as it may be required to make any Calculations from astronomical Tables, and the Time given be apparent Time; it is necessary first to apply the Equation of Time thereto to convert it into mean Time, the Tables being disposed according to mean Motions. Thus the Articles contained in the Ephemeris answering to Noon were computed to 0^h. increased, or 24 Hours of the preceding Day diminished, by the Equation of Time: And the Moon's Places set down for Midnight were computed to 12^h. increased or diminished by the Equation of Time.

What has been shewn concerning the Equation of Time chiefly respects the Astronomer, the Mariner having nothing to do with it in computing his Longitude from the Moon's Distances from the Sun and Stars observed at Sea with the Help of the Ephemeris, all the Calculations thereof being adapted to apparent Time, the same which he will obtain by the Altitudes of the Sun or Stars in the Manner hereafter prescribed.

But if Time-keepers should be brought into Use at Sea, the apparent Time deduced from an Altitude of the Sun must be corrected by the Equation of Time, and the mean Time found compared with that shewn by the Watch; the Difference will be the Longitude in Time from the Meridian by which the Watch was set, as near as the Going of the Watch can be depended upon.

The Equation of Time is computed in the Manner explained in my Remarks upon that Subject, in the Philos.
Transact.

Transact. Vol. liv. P. 342, for the Year 1764; namely, by taking the Difference of the Sun's true right Ascension, and his mean Longitude corrected by the Equation of the Equinoxes in right Ascension, and turning it into Time at the Rate of 1' to 15'. &c. The Equation of Time will be additive or subtractive as the Sun's true right Ascension is greater or less than his mean Longitude.

The Semidiameter of the Sun, Page 3d, is necessary to reduce the observed Altitude of his upper or lower Limb to that of the Center; also to reduce the observed Distance of the Moon's nearest Limb from the Sun's nearest Limb to the Distance of the Centers. It is also useful to Astronomers to verify or ascertain the Exactness of the Scale of their Micro-meters, by Comparison with the Measure of the Sun's horizontal Diameter. This Practice is particularly useful in solar Eclipses, when the Distance of the Cusps or the Verse Sine of the uneclipsed Part has been measured with the Micro-meter. The Semidiameters of the Sun in Mayer's Tables, on which all the Calculations respecting the Sun and Moon are made, suppose the Semidiameter at the mean Distance to be 16'. 2'', 8. which Mr. Mayer says he deduced from above 130 Observations taken with his Six Feet mural Quadrant, which seemed to him not ill adapted to the Purpose. It may not be amiss to take this Opportunity to remark, that the Quadrant here mentioned was given to the University of Göttingen by his late Majesty, and was made by that ingenious Artist the late Mr. John Bird after the Model of the Eight Feet mural Arch, which he finished for the Royal Observatory at Greenwich, and put up there in the Year 1750. Mr. Mayer made his Observations with his Six Feet mural Arch, from the Year 1756, to the Time of his Decease; with it he settled the mean Obliquity of the Ecliptic to the Beginning of the Year 1756, at 23°. 28'. 16'', which Dr. Bradley settled by his Observations, reduced to the Year 1750, at 23°. 28'. 18''. The Difference is agreeable to what ought to arise from the gradual Diminution of the Obliquity of the Ecliptic at the Rate of about $\frac{1}{2}$ a Second in a Year. The same Instrument he also used in settling the Elements of his solar Tables; and it is most probable that with the same he settled his Table of Refractions at the End of his solar Tables; the Agreement

Agreement of this Table with Dr. Bradley's, see Page 1st of Requisite Tables (being both suited to the same Temperature of the Air) is so great, that they seem rather like One and the same than Two different Tables.

The Time of the Sun's Semidiameter passing the Meridian, serves to reduce an Observation of a Transit of the preceding or subsequent Limb over the Meridian to that of the Center, when only One was observed. It signifies a Portion of apparent Time, or even mean Time, the Difference being absolutely insensible upon so small an Interval. It is found thus: Increase the Sun's Semidiameter in the Ratio of the Cosine of his Declination to the Radius, to find his Semidiameter in right Ascension, which turned into Time at the Rate of 1' to 15'. and 1" to 15". gives the Time required. The Sun's Semidiameter in right Ascension is readily found by adding the Log. Cosine of his Declination to the logistic Logarithm of his Semidiameter, the Sum is the logistic Logarithm of his Semidiameter in right Ascension; which divided by 15 gives the Time of his Semidiameter passing the Meridian. If the Clock by which the Observation is made be regulated according to the sidereal Time, this Quantity must be increased in the Ratio of 365 to 366, if great Precision is required.

From the Time of the Sun's Semidiameter passing the Meridian may also be found the Time of its passing the horizontal or vertical Wire of a Quadrant or Sextant, which on some Occasions may have its Use.—The hourly Motion of the Sun is useful in computing solar and lunar Eclipses; also in correcting the assumed Longitude of the Ship, in order to find the Time from an Observation of the Distance of the Moon from the Sun, independent of the Distances contained in the Nautical Ephemeris; See British Mariner's Guide, P. 49, and Table at the End of the same, Page 25. The Logarithm of the Sun's Distance is useful in the Calculation of the Places of the Planets and Comets. The Place of the Moon's Node signifies its mean Longitude, and is necessary for finding the Equation of the equinoctial Points both in Longitude and right Ascension, the Equation of the Obliquity of the Ecliptic, and the Deviations of the fixed Stars in right Ascension and Declination.

The Eclipses of Jupiter's Satellites are well known to afford the readiest, and for general Practice the best Method of settling the Longitudes of Places at Land; and it is by their Means principally that Geography has been so much reformed within a Century past, and the Position of the most distant Places determined with equal Accuracy to the nearest. It was hoped that some Means might be found of using proper Telescopes on Shipboard to observe these Eclipses; and could this be effected, it would be of great Service in ascertaining the Longitude of a Ship from time to time. In my Voyage to Barbadoes under the Direction of the Commissioners of Longitude, in 1763 I made a full Trial of the late Mr. Irwin's Marine Chair proposed for this Purpose, but could not derive any Advantage from the Use of it; and, considering the great Power requisite in a Telescope for making these Observations well, and the Violence as well as Irregularities of the Motion of a Ship, I am afraid the complete Management of a Telescope on Shipboard will always remain among the Desiderata. However, I would not be understood to mean to discourage any Attempt founded upon good Principles to get over this Difficulty.

The Telescopes proper for observing the Eclipses of Jupiter's Satellites, are common refracting Telescopes from 15 to 20 Feet, reflecting Telescopes of 18 Inches or Two Feet focal Length, and Telescopes of Mr. Dollond's Construction with Two Object Glasses from 5 to 10 Feet; or, which are still more convenient, those of 46 Inches focal Length, constructed with Three Object Glasses, which are as manageable as reflecting Telescopes, and perform as much as those which he makes of 10 Feet with Two Object Glasses.

The Eclipses of Jupiter's Satellites are observed by Astronomers at Land, as well in order to provide Materials for improving the Theories and Tables of their Motions, as for the sake of Comparison with the corresponding Observations which may be made by Persons in different Parts of the Globe, whereby the Longitude of such Places will be accurately ascertained. It is indeed to be lamented that Persons, who visit distant Countries, are not more diligent to multiply Observations of this Kind; for want of which, the Observations made by Astronomers in established Observatories lose Half their Use,

Use, and the Improvement of Geography is retarded. But it is to be hoped that an Emulation will spring up among those who may have Opportunities of rendering so useful a Service to the Public, to incite them to watch diligently for the Occasions of observing these Eclipses carefully, particularly of the First and Second, which are most exact for the Purpose. The Eclipses, carefully calculated and set down in the Ephemeris, will serve to advertise them and Observers in general of the Times when they should attend to these Observations. The Person, who shall be under any Meridian different from Greenwich, must turn his Difference of Longitude into Time: See Requisite Table, P. 38, and add it to or subtract it from the Time of the Eclipse set down in the Ephemeris, according as he is to the East or West of Greenwich, to find the apparent Time at which the Eclipse will happen at his Meridian, nearly. He must further take care to regulate his Watch or Clock by apparent Time, or at least to know the Difference, as well in order to apprise him of the Time to look out for the Eclipse, as for ascertaining the apparent Time exactly at which he shall observe it. Equal Altitudes of the Sun or Stars taken with an Astronomical Quadrant afford the best Means of regulating Clocks and Watches for occasional Observations; or they may be taken with a Hadley's Quadrant, by Reflection from a Basin of Water or Quick-silver, or from the Horizon of the Sea, if the Observer has an open Prospect, and is not elevated above 5 or 6000 Feet above the Level of the Sea. But, if Opportunity does not admit of taking equal Altitudes, the Time may be determined from One Altitude taken in any of the Methods above-mentioned, at least Two or Three Points of the Compass distant from the Meridian, but the nearer to the East or West the better, the Latitude of the Place being known, or being found by Observations of the Meridian Altitude of the Sun or Stars made on Purpose. It will be better to take several Altitudes in order to take a Mean of the Results for greater Certainty. And if one Star be observed to the East and the other to the West of the Meridian, the Time will be determined with rather more Certainty. The Manner of computing the apparent Time from the Altitude of the Sun or a Star is shewn in Problems VIII. and IX. Pages 25 and 26 of the Explanation and Use of the Requisite Tables.

The Observer, being in a Place whose Longitude is well known, should be settled at his Telescope Three Minutes before the expected Time of an Immersion of the first Satellite; Six or Eight Minutes before that of the second and third Satellites; and a Quarter of an Hour or more before that of the fourth Satellite; chiefly on account of the Uncertainty of their Theories; but, if the Longitude of the Place is very uncertain, he must begin to look out for the Eclipse proportionably sooner: Thus, if the Longitude of the Place is uncertain to 3 Degrees, answering to 12 Minutes of Time, he ought to fix himself to his Telescope 12 Minutes sooner than is mentioned above. Nevertheless, when he has observed One Eclipse of any Satellite, and thereby found the Error of the Tables, he may allow the same Correction to the Calculations of the Ephemeris for several Months, which will advertise him very nearly of the Time of expecting the Eclipses of the same Satellite, and dispense with his attending so long.

The Immersions signify the Instant of the Disappearance of the Satellite by entering into the Shadow of Jupiter; and the Emergences signify the first Instant of its Appearance at coming out of the same. They generally happen when the Satellite is at some Distance from the Body of Jupiter, except near the Opposition of Jupiter to the Sun, when the Satellite approaches nearer to his Body. Before the Opposition of Jupiter to the Sun the Immersions and Emergences happen on the West Side of Jupiter, and after the Opposition on the East Side; but, if an astronomical Telescope be used, which reverses Objects, the Appearance will be directly the contrary. Before the Opposition, the Immersions only of the first Satellite are visible; and after the Opposition, the Emergences only. The same is generally the Case with respect to the second Satellite; both the Phænomena of the same Eclipse are frequently observable in the Two outer Satellites. The Immersions and Emergences marked with an Asterisk in the Ephemeris are those visible at Greenwich.

To know if an Eclipse will be visible in any Place, find whether Jupiter be 8° above the Horizon of the Place, and the Sun as much below it. This may be done near enough by a celestial Globe: Otherwise, the Time of the Sun's Rising and Setting

Setting may be found for any Latitude by a Table of semi-diurnal Arcs, contained in the popular Book called the Mariner's Compass Rectified, and many other Books; the Time of Jupiter's Rising and Setting may also be found from the Time of his passing the Meridian and Declination set down in the Ephemeris, with the Help of the same Table of semi-diurnal Arcs; adding or subtracting the semi-diurnal Arc answering to the same Declination of the Sun: Remembering always, that if Jupiter's Declination and the Latitude of the Place are of the same Denomination, the semi-diurnal Arc will be more than Six Hours, and if they are of contrary Denominations, will be less than Six Hours. But it may be easier found whether the Eclipse will be visible at Greenwich, or whether it should be properly marked with an asterisk, by the Tables, P. 28—31, annexed to the Nautical Almanac of 1772.

The Immersion or Emerision of any Satellite being carefully observed in any Place according to apparent Time, the Longitude from Greenwich is found immediately by taking the Difference of the Observation from the corresponding Time shewn in the Ephemeris, which must be turned into Degrees, &c. by Requisite Tables, Page 38; and will be East or West of Greenwich, as the Time observed is more or less than that of the Ephemeris.

Example; Suppose an Emerision of the first Satellite should be observed at the Cape of Good Hope, May 9, 1767, at $10^h. 46'. 45''$. apparent Time: The Time by the Ephemeris being $9^h. 33'. 12''$, the Difference is $1^h. 13'. 33''$, whence the Longitude of the Cape should be $18^\circ. 23'. 15''$, East of Greenwich, because the Time supposed to be observed at the Cape is more than that of the Ephemeris.

It is to be observed that a correspondent Observation of an Eclipse of a Satellite of Jupiter, made under a well-known Meridian, is to be preferred to the Calculations of the Ephemeris for comparing with an Observation made in a Meridian whose Longitude is required; but if no corresponding Observation can be obtained, as is frequently the Case, it will be best to find what Correction the Calculations of the Ephemeris require by the nearest Observations to the given Time that can be obtained; which Correction applied to the Calculation

calculation of the given Eclipse in the Ephemeris, renders it almost equivalent to an actual Observation.

The Longitudes and Latitudes of the Planets, Page 4, serve to know where to look for them in the Heavens, and when their Places may be conveniently settled by comparing them with fixed Stars by the Help of a Micrometer in a Telescope. They also shew when they are in the most important Points of their Orbits, where it is most material to observe them. They also serve to enable Persons less skilled to distinguish them from the fixed Stars. Their Declinations and the apparent Times of their passing the Meridian are particularly useful to Astronomers who are furnished with Quadrants and Transit Instruments well fixed in the Meridian, in setting their Instruments for observing their right Ascensions and Declinations.

The apparent Time of a Planet's passing the Meridian may be computed thus; the Planet's right Ascension being calculated from its Longitude and Latitude, and turned into Time, subtract the Sun's right Ascension at Noon in Time from it, to find the Time of the Planet's passing the Meridian nearly, which call T; take the Difference of the ☉ and Planet's daily Variations in right Ascension in Time; if the Planet is progressive in right Ascension, or the Sum, if it is retrograde, which call X; then say, by the Rule of Proportion;

As $24^h. \pm X : T :: X : e$ and $T \pm e$ will be the correct Time of the Planet's passing the Meridian. The upper Signs are to be used both to X and e if the Planet's progressive Motion in right Ascension be greater than that of the Sun; in any other Case the lower Signs are to be made Use of.

But perhaps it may be found more readily by continual Approximation as follows: Take the proportional Part of the Difference or Sum of the ☉ and Planet's daily Motion in right Ascension, answering to the Time of the Planet's passing the Meridian, found nearly, in Proportion to $24^h.$ and take a further like proportional Part of this proportional Part; and again of this last, and so on as far as is necessary. The Sum of all these proportional Parts added to the Time of the Planet's passing the Meridian found nearly, if the Planet's progressive Motion in right Ascension is greater than that of the Sun, otherwise subtracted, gives the apparent Time of the Planet's passing the Meridian.

Example;

Example: Let it be required to find the Time of the Moon's passing the Meridian, July 1, 1767.

The Sun's right Ascension in Time July 1st is, $6^h. 40'. 25''$. and July 2d, $6^h. 44'. 33''$. by the Ephemeris. Therefore his daily Motion in right Ascension is $4'. 8''$. The Moon's right Ascension July 1st at Noon by the Ephemeris is $159^\circ. 2'$. answering to $10^h. 36'. 8''$. of Time, and July 2d is, $169^\circ. 39'$. answering to $11^h. 18'. 36''$. The Difference is, $42'. 28''$. of Time, from which $4'. 8''$. being subtracted, leaves $38'. 20''$. Subtract $6^h. 40'. 20''$. the Sun's right Ascension July 1st at Noon, from $10^h. 36'. 8''$. the Moon's right Ascension the same Noon, the Remainder $3^h. 55'. 43''$. is the Approximate Time of the Moon's passing the Meridian. The proportional Part of $38'. 20''$. answering to this, is $6'. 17''$. and the proportional part of $6'. 17''$. is $9''$; therefore $6'. 17''$. and $9''$. or $6'. 26''$. added to $3^h. 55'. 43''$. give $4^h. 2'. 9''$. the apparent Time of the Moon's passing the Meridian. In the Ephemeris it is $4^h. 2'$. It may also be computed by taking the Difference of the Moon's right Ascension at Noon and Midnight, but then Half the Sun's daily Variation in right Ascension must be made use of, and Proportion must be made for 12 instead of 24 Hours: and if the Moon passed the Meridian after Midnight, the Sun's right Ascension at Midnight must be used, which is a Mean between his right Ascensions on the preceding and subsequent Noon. For the Planets, it will be sufficient to take the first proportional Part only.

The Days of the Oppositions, Quadratures, &c. of the Planets to the Sun, are Times at which they ought to be observed in fixed Observatories, for settling the Elements of their Orbits by a Series of several Years Observations.

The 5th, 6th, 7th, 8th, 9th, 10th, and 11th Pages of each Month contain the Moon's Place, and all the Circumstances relating to her Motion, and her Distances from the Sun and proper Stars, from which her Distance should be observed for finding the Longitude at Sea. The Longitude, Latitude, and Declination of the Moon, and Time of her passing the Meridian, afford the like Uses with the same Circumstances of the Planetary Motions, and many more besides. For the sake of greater Precision, the Moon's Longitude, Latitude, Right Ascension, Declination, Semidiameter, horizontal

horizontal Parallax, with its proportional Logarithm, are computed Twice a Day, to Noon and Midnight, and may readily be inferred to any intermediate Time with the greatest Exactness.

Example: Let it be required to find the Moon's Longitude and Latitude, &c. July 16, 1767, at 16^h. 22'. 16". First to find the Longitude. The Moon's Longitude, July 16, at 12^h. is 0°. 60'. 40". 25". and July 17 at Noon, 0°. 13°. 47'. 48". the Difference 7°. 7'. 23". is the Moon's Motion in 12 Hours; say then, by the Rule of Proportion,

As 12^h. is to 4^h. 22'. 16" (the excess of 16^h. 22'. 16" above 12^h.) so is 7°. 7'. 23". to 2°. 35'. 41". but this must be corrected on account of the Moon's unequal Motion in 12 Hours, by the Table of Equation of second Difference annexed to Mr. Taylor's Sexagesimal Table, P. 244—247: for this Purpose take out of the Ephemeris the Two Longitudes of the Moon next preceding the given Time, and the Longitudes immediately following it, and set them down in Order one after another, as follows;

		1st Diff.	2d Diff.
	. . . "	° ' "	' "
July 16, Noon	11.29.29.34	7.10.51	
Midnight	0. 6.40.25	7. 7.23	3.28
17, Noon	0.13.47.48	7. 3.39	3.44
Midnight	0.20.51.27		

Take their Differences, 7°. 10'. 51", 7°. 7'. 23", 7°. 3'. 39", take the Differences of these Differences, or the 2d Differences 3'. 28"; 3'. 44". and take their Mean which is 3'. 36". Now look for the Equation of second Difference, answering to 4^h. 22' after Midnight, found on the Side, and 3'. 36" at Top, which will be found = 24", and which, according to the Remark at the Bottom of the Table, must be added to 2°. 35'. 41", the first proportional Part, because the Motion in 12 Hours or first Differences are decreasing; the Sum 2°. 36'. 5" added to 0°. 60'. 40". 25", the Moon's Longitude at Midnight, gives 0°. 9°. 16'. 30", the Moon's true Longitude, and is as correct as the Longitudes from which it is deduced.

N. B.

N. B. If the first Differences of the Four Longitudes of the Moon taken out first increase and then decrease, or, vice versa, first decrease and then increase, take Half the Difference of the Two second Differences for the Mean second Difference, with which take out the Equation of second Difference, and add or subtract it as the First first Difference is greater or less than the Third first Difference.

To find the Moon's Latitude. Take out of the Ephemeris the Two Latitudes preceding and Two following the given Time, and set them down in Order, and take their first and second Differences, and the Mean of the Two second Differences; find the proportional Part of the Middle first Difference answering to the Hours and Minutes, &c. of the given Time after Noon or Midnight; which correct in the following Manner: Entering Table of Equation of second Difference, Pag. 244—247, with the Hour from Noon or Midnight on the Side, and the Mean second Difference at Top, take out the corresponding Number of Seconds, which added to or subtracted from the proportional Part found above, according as the Motion in 12 Hours or first Difference is decreasing or increasing; or, more generally, according as First first Difference is greater or less than Third first Difference, gives the proportional Part corrected; which now added to or subtracted from the Moon's Latitude at the preceding Noon or Midnight, as the Latitude in these 12 Hours is increasing or decreasing, gives the Moon's Latitude correct.

Example: The Moon's Latitude is required, July 16, 16^h. 22'. 16".

	D's Lat. by the Ephem.	1st Dif.	2d Dif.	Mean of 2d Dif.
	" " "	" "	" "	" "
July 16, Noon	4.31.10 N.	18.26		
Midnight	4.49.36	13.50	4.36	4.40
17, Noon	5. 3.26	9. 6	4.44	
Midnight	5.12.32			

The Moon's Latitude July 16 at Midnight being 4°. 49'. 36" N. and the Motion in the next 12 Hours being 13'. 50". say by Proportion,

8

As

As 12^h is to $4^h. 22'. 16''$, so is $13'. 50''$ to $5'. 2''$: but this must be corrected by adding $32''$, the Equation of second Difference, answering to the Hour $4^h. 22'$, and the Mean second Difference $4'. 40''$, because the first Differences are decreasing, or rather because the first of them $18'. 26''$, is greater than the last of them $9'. 6''$. therefore the proportional Part corrected is $5'. 2'' + 32'' = 5'. 34''$, which added to $49. 49'. 36''$, gives $4. 55'. 10''$ N. the Moon's Latitude correct.

Remarks on some Circumstances necessary to be attended to, in order to obtain and apply the Correction of second Differences rightly in computing the Moon's Latitude.

I. If the Moon's Latitude taken out of the Ephemeris for Noon and Midnight changes its Denomination from North to South or from South to North, the Sum of the Two Latitudes of contrary Denominations, where the Change happens, is to be accounted the first Difference in that Place.

II. If the Three first Differences first increase and then decrease, or vice versa, first decrease and then increase, Half the Difference of the Two second Differences is to be taken for the Mean second Difference.

III. If the Series of Four Latitudes taken out should first increase and then decrease about the Moon's greatest Latitudes; take the Sum of the Two first Differences standing on each Side of the greatest Latitude for the second Difference in that Place; correct the Moon's Latitude at Noon or Midnight by the simple proportional Part first found; and to the Latitude so corrected, add always in this Case the Equation of second Difference from Pag. 244—247, answering to the Mean second Differences.

Before I quit this Subject of Interpolation by second Differences, I shall point out another Method, by which the same End may be obtained more readily, and with fewer Rules, by those who are well acquainted with algebraic Subtraction and Addition, and the Manner of applying the Signs in those Operations. Subtract each Latitude from the following for the first Differences, to which prefix the Sign — if the Latitudes decrease; and subtract each first Difference, thus found, from the following one of the same Order for the second Differences. Half the Sum of the Two second Differences

ferences standing on each Side of the Interval to be interpolated, is to be accounted the mean second Difference; the Equation corresponding to it by Table, Pag. 244—247, is to be applied always with the contrary Sign.

These Operations are to be performed, and the Signs to be applied as in algebraic Subtraction and Addition. Note further, if the four given Latitudes change their Denomination, call the second Latitude +, and those of a contrary Denomination —.

The Moon's Declination may be found at any Hour in the same Manner as her Latitude; but as the Correction arising from second Differences will never exceed $2\frac{1}{2}$, this may be neglected on most Occasions; but if any one is desirous to obtain the Declination true to a Minute, the Correction is easily applied, as shewn above.

The other Articles of Page 6, and 7, viz. the Moon's right Ascension, her Semidiameter, horizontal Parallax, with its proportional Logarithm, and the Distances contained in the Four last Pages of the Month, may be all found correctly by even Proportion, without requiring any Allowance on account of second Differences. The proportional Part of the Moon's Longitude, &c. for any Hour may be found very readily by the Help of the Table of proportional Logarithms, Pag. 39—55 of the Requisite Tables.

The Moon's Longitude and Latitude are used in computing her Distances from the Sun and Stars contained in the Four last Pages of the Month, as well as in the Appulses to Stars pointed out in Page 1, and, jointly with her Parallax and Semidiameter, are necessary for computing the Eclipses of the Sun and Moon, and the Occultations of fixt Stars and Planets by the Moon. They also facilitate the Calculation of the Longitude of any Place from an observed Eclipse of the Sun, or Occultation of a Star or Planet by the Moon: Or, if the Meridian be well known, the Parallax and Semidiameter serve to deduce the Moon's true Place in the Heavens from the Observation, which compared with that given by the Ephemeris shews the Error of the Tables at the Time. The Moon's Semidiameter and Parallax are applied in correcting almost all Observations of the Moon. The proportional Logarithms of the Moon's Parallax serve further to facilitate the Calculations of Parallaxes.

The Moon's right Ascension and Declination are useful to compute her Altitude at any Time, particularly at the Observation of her Distance from the Sun or a Star, supposing it was neglected to be or could not be observed properly; which latter Case may sometimes happen in the Night, though I think but rarely; the utmost Accuracy therein not being required for the Calculations of Refraction and Parallax. See British Mariner's Guide, Page 57, and Requisite Tables, P. 24. The Moon's Declination, with her Semidiameter and Parallax, serve for finding the Latitude by the Meridian Altitude of her upper and lower Limb observed at Sea. See British Mariner's Guide, Page 93, and Requisite Tables, Page 15. The Moon's right Ascension and Declination serve also to compute the Time from her Altitude observed at the Observation of her Distance from a Star; whence the Longitude may be inferred, tho' no Altitude of the Sun or a Star was taken for regulating the Time. See British Mariner's Guide, Page 61, and Mr. Edwards's 5th Problem annexed to the Nautical Almanac of 1781, Page 10.

The Distances of the Moon from the Sun and fixt Stars, contained in the 8th, 9th, 10th, and 11th Pages of the Month, are set down to every Three Hours of Apparent Time by the Meridian of Greenwich, and are designed to relieve the Mariner from the Necessity of a Calculation, which he might think prolix and troublesome, and to enable him, when compared with the Distance observed carefully at Sea, to infer his Longitude readily and with little Danger of Mistake to a Degree of Exactness that may be thought sufficient for most nautical Purposes. But useful and valuable as the Practice of this Method may be at present, it is a Remark not unworthy our Notice, that every future Improvement of the Lunar Tables, as well as the Instruments, will bring it nearer and nearer to Perfection.

The Moon's Distances are computed both from the Sun and proper Stars, and generally from One Object on each Side of her, to afford the Mariner a greater Number of Opportunities of Observation, and a Means of attaining a greater Degree of Exactness. The Distances from the Sun are computed between 40° and 120° of Distance. While the Moon is between the Distances of 20° and 40° from the Sun, her

her Distance is computed only from a Star on the contrary Side that the Sun is. When she is between the Distances of 40° and 90° from the Sun, her Distance is computed both from the Sun and from a Star on the contrary Side to the Sun; when the Moon is above 90° from the Sun her Distance is computed from Two Stars, one on each Side of her; though still her Distance is computed also from the Sun from 90° to 120° . Though the Distance of the Moon from the Sun or Star, well observed with a good Instrument, is sufficient to determine the Longitude, with the Help of the Ephemeris, always within a Degree, and generally much nearer, yet it will conduce to still greater Accuracy, if the Observer takes the Distance of the Moon from Two Stars, or the Sun and a Star, or, when the Moon is between 90° and 120° Distance from the Sun, from the Sun and Two Stars, if he can be so lucky as to obtain these several Observations.

The Longitude being computed from the Observations made with each Star respectively, the Mean of the Results is to be taken as probably approaching nearest to the true Longitude. In particular the Moon's Distance should be taken from Two Stars, or the Sun and a Star on each Side of her, as often as Opportunity permits, since the Mean of the Results will probably be at least as exact again as either separately, I mean as far as depends on any Imperfection of the Instruments, and unavoidable small Errors arising in the Use of them; Errors of these Kinds having a natural Tendency to correct each other; for that small Error which arises from the Lunar Tables will affect the Result from either Star equally. But the Error of Mayer's last Lunar Tables as corrected from a Series of Dr. Bradley's Observations of 9 Years, by Mr. Charles Mason in 1778, being these made use of for the Nautical Almanac of 1789, and the subsequent ones, probably never exceeding $30''$, the Uncertainty hence arising in the Determination of the Longitude can scarcely ever exceed 17 Miles of Longitude; and generally will be much less.

The Distances set down in the Ephemeris, afford the Observer a ready Means of knowing the Star from which the Moon's Distance is to be observed; for he has nothing to do but to set his Quadrant to the Distance computed roughly from the Ephemeris, neglecting the Seconds, at the apparent
Time

Time estimated nearly by the Meridian of Greenwich; and direct his Sight to the East or West of the Moon, according as the Distance at Greenwich is found in the 8th and 9th, or 10th and 11th Pages of the Month; and having found the Moon upon the little Speculum, let him give a Sweep with the Quadrant to the Right and Left, and he will find the Star he seeks for, if above the Horizon and the Air be clear, nearly in a Line perpendicular to the Line of the Moon's Horns or longer Axis, or, which is the same Thing, in the Line of the Moon's shorter Axis produced. The Star is always one of the brightest, so that there is little Danger of mistaking another for it, if the preceding Directions are carefully observed. The Time at Greenwich is estimated nearly by turning the supposed Longitude from Greenwich into Time, by Requisite Tables, Page 38, and adding it to or subtracting it from the apparent Time at the Ship, as its Longitude is West or East of Greenwich. It will be sufficient if the Distance be computed from the Ephemeris within 10', or 20', for setting the Quadrant. The principal Use of the Distances of the Moon from the Sun and fixt Stars; namely, in determining the Longitude by Comparison with the corresponding Distances observed at Sea, is shewn in Problem XI. Page 37 of Requisite Tables.

The Distances contained in the Ephemeris were computed strictly to Noon and Midnight, and thence interpolated for every Three Hours, according to the Method shewn for computing the Moon's Latitude, Page 161—163; except that the Correction of second Differences at the Middle of the Interval to be interpolated, was taken $\frac{1}{8}$ of the Mean of the Two second Differences, and at the First and Third Quarter of the Interval was taken $\frac{3}{4}$ of the Correction just found at the Middle of the Interval; instead of consulting Mr. Taylor's Table, Pag. 248 and 249, which would however have given the same Result. But, at the first 12 Hours, when the Distances of the Moon from a Star begin, and the last 12 Hours, when the Distances end, there being only One second Difference instead of Two second Differences on each Side to take a Mean of, this Method fails in these Cases, and therefore the following is to be substituted in its Stead, being derived from Sir Isaac Newton's Solution of the Problem of
drawing

drawing a Curve through the Extremities of any Number of given Ordinates. Phil. Nat. Princ. Math. Page 486. Edit. Londini 1726, or Dr. Horsley's complete Edition of Sir Isaac Newton's Works, Vol. 3d. Page 128.

From Four Distances at Noon and Midnight computed strictly to interpolate Three Distances at the 3d, 6th, and 9th Hour of the first or last Interval.

Subtract each Distance from the following, for the first Difference, and prefix the Sign —, if the Distances decrease. Subtract each first Difference thus found from the following One of the same Order, for the second Difference: And in like Manner subtract the First second Difference from the following for the third Difference; applying the Signs as in algebraic Subtraction. Denote the first or last first Difference by b ; the first or last second Difference by c , according as the Interpolation to be made is for the first or last 12 Hours; denote also the third Difference by d ; and, a being put to signify the Distance at the Beginning of the Interval, the interpolated Distances will be as follows:

$$\text{At 3d Hour of first Interval } a + \frac{1}{4}b - \frac{3}{32}c + \frac{7}{128}d$$

$$\text{At 6th Hour of first Interval } a + \frac{1}{2}b - \frac{1}{8}c + \frac{1}{16}d$$

$$\text{At 9th Hour of first Interval } a + \frac{3}{4}b - \frac{3}{8}c + \frac{3}{128}d$$

Or

$$\text{At 3d Hour of last Interval } a + \frac{1}{4}b - \frac{3}{32}c - \frac{5}{128}d$$

$$\text{At 6th Hour of last Interval } a + \frac{1}{2}b - \frac{1}{8}c - \frac{1}{16}d$$

$$\text{At 9th Hour of last Interval } a + \frac{3}{4}b - \frac{3}{8}c - \frac{7}{128}d$$

In adapting these Formulæ to Numbers, great Care must be taken about the right Application of the Signs. Thus if b , c or d is Negative, apply the Number expressing the Value of that Term of the Formula where it is found with a contrary Sign to that of the Formula.

Let me add in this Place, that if in filling up the first and last Intervals, a new second Difference has been supposed in arithmetical Progression with the Two given ones, in order to take a Mean between it and the first or last second Difference, the Interpolation at the Middle of the Interval or 6th Hour will be had true, the same as if the above Formulæ had been used: But at the Interpolation of the first and
third

third Quarter there will be an Error of $\frac{1}{128}$ third Difference; which will be corrected, by applying $+\frac{1}{128}d$ or third Difference, to Number found at the first Quarter of the Interval, and $-\frac{1}{128}d$ to that found at the third Quarter of the Interval; equally the same whether it be the first or last Interval.

The Configurations of Jupiter's Satellites, Page 12th and last, exhibit the apparent Positions of the Satellites with respect to each other, and to Jupiter at such an Hour of the Evening or Night as they are most likely to be observed, and serve to distinguish the Satellites from one another. Jupiter is distinguished by the Mark $\odot$, and the Satellites by Points with Figures annexed, the Figure 1 signifying the first Satellite, 2 the second Satellite, &c. When the Satellite is approaching towards Jupiter, the Figure is put between Jupiter and the Point; and when the Satellite is receding from Jupiter, the Figure is put on the other Side of the Point. The Satellites are in the superior Parts of their Orbits, or furthest from the Earth, when they are marked to the right Hand or West of Jupiter approaching him; or to the left Hand or East of Jupiter receding from him; but are in the inferior Part of their Orbits, or nearest to the Earth, when they are marked to the right Hand or West of Jupiter receding from him, or to the left or East of Jupiter approaching him. The Cypher 0, sometimes annexed to the Figure of the Satellite towards the Margin, signifies that it is invisible on the Face of Jupiter; and the black Mark $\bullet$, signifies that it is invisible, being eclipsed in Jupiter's Shadow, or behind Jupiter eclipsed by his Body.

THE END.

D I R E C T I O N S

F O R M A K I N G

T H E B E S T C O M P O S I T I O N

F O R

The Metals of Reflecting Telescopes ;

A N D T H E M E T H O D

O F C A S T I N G , G R I N D I N G , P O L I S H I N G ,

A N D G I V I N G T H E M

T H E T R U E P A R A B O L I C F I G U R E .

B Y

The Rev'd JOHN EDWARDS, B.A.

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A

DICTIONARY

THE BEST COMPOSITION

The Metals of Helmholtz's

OF CASTING, GRINDING, POLISHING

THE TREE PARABOLIC FIGURE

The Rev. J. J. EDWARDS, B.A.

COMMISSIONERS OF LONGITUDE

[4]

DIRECTIONS for making the best Composition for the Metals of REFLECTING TELESCOPES, and the Method of casting, grinding, polishing, and giving the great Speculum the true parabolic Figure.

By the Rev'd JOHN EDWARDS, B. A.

THE Methods in general used for casting, grinding, and polishing the Metals for Reflecting Telescopes being well known to Workmen, and having been treated of in the most full and satisfactory Manner in Dr. Smith's Optics, and also by Mr. Mudge in the Philosophical Transactions, Vol. LXVII, Part I, I shall not dwell upon these Points, but shall add such Directions and Observations of *my own* as I have found by Experience to answer much better than the Methods taught by those Writers. Some Telescopes constructed by me have been tried by the Rev'd Dr. MASKELYNE, Astronomer Royal, and found very greatly to excell in Brightness*, and to equal in other Re-

* Mr. Edwards's Telescopes shew a white Object perfectly white, and all Objects of their natural Colors; very different from common Reflecting Telescopes, which give a dingy copperish Appearance to Objects. I found, by a careful Experiment, that they shew Objects as bright as a treble Object-glass Achromatic Telescope, both being put under equal Circumstances of Areas of the Aperture of the Object metal and Object-glass, and equal magnifying Powers; whereas the Diameter of the Aperture of a common Reflecting Telescope must be to that of an Achromatic Telescope as 8 to 5, to produce an equal Effect.

NEVIL MASKELYNE.

spects, Telescopes of the same Size, constructed by the best Artists in London.

Of the best Composition for Reflecting Specula.

THAT I may not be tedious upon this Point, it may be necessary to acquaint my Reader, that I have made Experiments upon the following Metals and Semi-metals, in order to discover a Composition for a Speculum, which should reflect the greatest Quantity of Light, and consequently be capable of receiving the finest Polish. I combined them in several Proportions, and ground and polished them. The Metals and Semi-metals I tried were Silver, Platina, Iron, Copper, Brass, Lead, and Tin; Crude Antimony, Regulus of Antimony, Martial Regulus of Antimony, Arsenic, Bismuth, Zinc, and Antimony combined with Cawk-stone*. Having tried many Compositions of them (see the Appendix) I found that 32 Ounces of Copper, with 15 or 16 Ounces of Grain Tin (according to the Purity of the Copper) with the Addition of a little † Brass and Arsenic; viz. one Ounce of each to the above Proportion of Copper and Tin, will form a Metal capable, when polished in a proper Manner, of reflecting much more Light than any other Metal that has as yet been offered to the Public. When I say that the Proportion of Tin is from 15 or 16 to 32 Ounces of Copper, I would be understood, that

* See a most curious Experiment upon Cawk-stone and Antimony in the Philosophical Transactions, No. cx.

† If One Ounce of Silver be added to this Composition, the Metal will be much better and whiter.

the Proportion of Tin will not always be accurately the same, as Copper will take more or less Tin to perfectly saturate it according to its Purity. It might be of Use previously to purify the Copper as much as possible. A very little Experience in these Matters will enable any one to know exactly when the Copper is completely saturated; as the Composition will, if broken, appear of a most beautiful bright and glassy Nature, very much resembling the fine Face of Quicksilver. My Method to ascertain that Point accurately, is to melt 32 Ounces of Copper, and to add to it, when sufficiently fused, 15 Ounces of Tin, and to pour the Mixture into an Ingot: Then to a certain known Portion of this Composition, I add a very small, but known Portion of Tin; and thus, by a few Trials, I can easily obtain the Point of complete Saturation, and the Maximum of Perfection. Having then ascertained what Portion of Tin I added to the above known Quantity of the Composition, I add the proportional Quantity of Tin to the *Whole*, when melted a Second Time. Thus, if I find, that I must add a Quarter of an Ounce of Tin to One Pound of the Composition, so as to obtain the *ne plus ultra* of * Brilliancy; then I know, that, when I shall melt the Remainder of the Metal a Second Time, in order to cast the Speculum, I must add One Ounce of Grain Tin to Four Pounds of the Com-

* If too much Tin should be added; viz. if 17 Ounces of Tin is put to 32 Ounces of Copper, the Composition is not *brilliant* when broken, but of a *grey blue* and dull Colour. If the Quantity of the Tin be further increased, the Metal will become almost *black*.

position,

position, made according to the Proportion of 30 Ounces of Copper to 15 Ounces of Tin. The *Arsenic* must be added in the *Second* Melting, when the Speculum is intended to be cast, as the Heat of the Mixture, in the * *First* Melting, is so great as to render the most Part of the *Arsenic* volatile, and in a great Measure prevent its Action upon the Metals. It is somewhat singular that *Arsenic*, though particularly recommended by † Sir ISAAC NEWTON for this Purpose, should be hastily thrown aside by the Founders, as well as passed over unnoticed by the Writers upon this Subject. This imprudent Disuse of it I can only attribute to the disagreeable Fumes or Vapours which arise when it is introduced into the Crucible to the melted Mixture, which may produce disagreeable Effects upon the Operator, if proper Care is not taken to prevent them from being received into the Lungs ‡. All the Precaution necessary, is to bruise the *Arsenic* coarsely, and introduce it into the Crucible with a Pair of Tongs, having tied it up in a Piece of Paper; giving it then a Stir with a wooden Spatula, retaining your Breath, avoid it till you can see no more Vapours arise from the Crucible, when the Metal will be ready to be poured into the

* Sir ISAAC NEWTON melted the Copper first, then added the *Arsenic*, and lastly the Tin; as without Doubt he knew that the Tin should remain in a fluid State the shortest Time possible. It is true that Sir ISAAC added the *Arsenic* to the melted Copper; but as he well knew that a great Part of it would be rendered volatile, he therefore added a very large Quantity of it; viz. *Arsenic* 1 to Copper 6.

† See Dr. David Gregory's Optics by Dr. Brown and Dr. Desaguliers, p. 219; or Philosophical Transactions, N° 87.

‡ I have been assured by Two ingenious experimental Philosophers, that the Fumes of *Arsenic*, even when the Garlic Smell is very strong, are not in the least prejudicial to the Lungs.

NEVIL MASKELYNE.

Flasks to cast the Speculum. The great Use of *Arsenic*, in this Composition, is to render the Metal much more compact and solid, and indeed much more *beautiful*, as any one may experience by comparing the Composition *with* *Arsenic*, with the same Composition of Copper and Tin *without* *Arsenic*. In general I find One * Ounce of *Arsenic* sufficient for One Pound of the Metal. A much greater Quantity of *Arsenic* may be used without any Disadvantage to the Beauty or Compactness of the Metal; but then it is too apt to tarnish, if exposed to the Air for some Time: Three Quarters of an Ounce or an Ounce of *Arsenic* to One Pound of Composition will not tarnish in the least Degree. Indeed the Reason why the Metals, generally made Use of for Specula, tarnish when they are much exposed to the Air, is because the Quantity of Copper in their Composition is not nearly saturated, and the Acid contained in the Air, by acting upon it, extracts the Copper from the Tin, and turns the Metal into a dirty or dingy coloured Speculum, and which (besides the great Loss of Light) causes the common Reflecting Telescopes to shew all Objects of a dirty red or yellowish Colour. This, however, is not the Case in the Metals made of the above Composition; for, as the Copper is completely saturated, the Air cannot act upon it in the least Degree. I must not, however, pass over One Caution in the Mode or Manner of melting the Composition, and that is, that the Copper must be melted first of all, and rendered as fluid as possible, then the Brass and Silver must be added, and the

* One Ounce of *Arsenic* will however sufficiently act upon and bind Three Pounds Weight of the Metal, so that it shall never tarnish by the Air.

Whole fluxed with the common black Flux, made of Two Parts of Tartar to One of Nitre, or by stirring the melted Mixture with a wooden Spatula of *Birch*, and made as fluid as possible. The Tin must now be added, and the Whole poured off immediately after it is once stirred together; for if the Mixture is *continued* on the Fire some time after the Tin is added to it, it will always prove porous afterwards, though it be melted a Second Time, with the smallest Heat possible. As I ever found this to be the Case, I naturally conjectured that the Metal would be most solid and free from Pores, when the Tin remained the least Time possible in a State of Calcination. Experience determined the Truth of my Conjecture, and I now find that the best Method possible to make this Composition to the greatest Advantage is, to melt the Copper as fluid as possible, and flux it with the black Flux; to melt the Tin in a separate Crucible by itself; to take the Two Crucibles out of the Fire, and pour the melted Tin into the fluid Copper; and stir it instantly with a wooden Spatula, and pour the Whole immediately into a large Quantity of cold Water. The sudden Chill from the cold Water divides the melted Mass into an infinite Number of small Particles, and by that Means cools it instantaneously, and consequently prevents the Tin from calcining sensibly; and hence I have always found, that in the Second Melting, the Composition was entirely free from Pores, even though no *Arsenic* had been employed. Yet the Addition of *Arsenic* ever rendered it much more compact, and indeed * speci-

* The specific Gravity of the Composition itself is 8,78; with the Addition of 1 oz. of *Arsenic* to 1 lb. of Metal is 8,89.

fically heavier, as well as more brilliant and beautiful. On reversing the Process, if the Tin is put into the Bottom of the Crucible, and the Copper at the Top of it, which I have frequently done, the Copper will melt with a very little Heat; whereas, when Copper is put into the Crucible by itself, it requires a pretty strong Heat to cause it to melt. When I first made Use of this Method, I imagined I had discovered a very easy one to melt the Copper, and consequently I thought I had greatly improved the common Method; and, as Mr. *Mudge* ascribed the Pores in the Metal to the Tin being calcined by the great Heat of the fluid Copper at its First Melting, I naturally expected to find the Metal, made by the above Process, totally free from Pores, especially in the Second Melting, as the Heat was considerably less than if the Copper had been melted first by itself. However I always found it full of Pores, much more porous than I had ever seen it before. For some time I could not discover the true Cause, having no Idea that the Pores were owing to the Tin remaining so long in the Fire in a fluid State, and therefore in a State of perpetual Calcination. I attributed the Porosity of the Metals, which I made of this Composition, to a Multitude of Causes, till thoroughly tired of Experiments and Conjectures to ascertain the true Reason, I was determined to melt the Copper first and the Tin afterwards, as I had always done before I dropped upon this improved Method, as I imagined. The Result was, the Metal was infinitely more compact and much less porous. By melting the Copper first and then adding the Tin to it, I soon discovered that the longer the Tin remained in the Fire, the more porous the Metal turned out; and, *vice versa*, the sooner I poured

it off, after I had added the Tin, the more compact and free from Pores it proved. From these Observations I determined to try the Effect of adding the Tin in a fluid State to the melted Copper, and to cool the Whole immediately, to prevent, as far as I was able, Calcination from taking Place. Experience confirmed my Conjectures; and I soon found that by pouring the whole melted Mass, the Instant they were mixed and stirred together, into cold Water, the Metal always proved, in the Second Melting, solid and much more compact, beautiful, and white, than I had ever seen it by any other Process. One Thing I cannot pass over, as it affords a clear Proof of the Use of *Arsenic* in rendering the Metal much more solid and compact, and consequently more free from Pores than if no *Arsenic* had been used in the Composition. Whenever I made the Composition, by melting the Copper and Tin together, by putting them into the Crucible at the same time and melting them down together, the Metal was always porous, as I observed before: However frequently I melted it afterwards, and though I gave it no more Heat than was barely necessary to melt it, yet if I added to this very porous Metal, after it was melted, a small Quantity of *Arsenic*; viz. an Ounce to One Pound of the Metal, it was really astonishing to see how much better the Metal turned out, being considerably harder than before, and incomparably less porous. I mention this Circumstance, which any one may easily try, to shew the very great Advantage of using a small Portion of *Arsenic* to render it more compact, and, as Sir ISAAC NEWTON justly * observes, more *white* than before. The Use of the

* See Appendix to *Gregory's Optics*, p. 219; or the *Philosophical Transactions*, N^o 81.

small Portion of Brass in this Composition is to render it more tough and not so excessive brittle, as this Composition without the Brass would prove. A small Portion of Silver will make the Metal much whiter, though if too much is added it is apt to be porous. Having said so much relative to the Composition of the Metal, which indeed is a capital Article, I pass on to

The Manner of casting the Metal.

THE Sand most proper for casting this, and indeed any other Metal, is a fine Sand, with no more Loam or Clay mixed with it naturally than is absolutely necessary to make it tenacious enough to adhere together when properly moistened. If too much Clay is mixed by Nature with the Sand, it will always *blow* the Metal in different Directions, sometimes indeed to the great Danger of the Operator. On the contrary, if the Sand does not contain a sufficient Quantity of Clay, it will not remain in the Flasks, or take a proper Impression from the Pattern or Model. The best Sand I could ever meet with for the Purpose of casting Specula, is the common *Highbgate* Sand (near *London*) generally used by the *London* Founders. It should be as little wet as may be, and well beaten, but not too hard. The Flasks should be at least Two Inches wider than the Metal intended to be cast. If the Sand is not of a sufficient Thickness round the Metal it will instantly become dry when the hot fluid Metal is poured into it, and consequently will contract, and of course the fluid Metal will run out of the Flasks. A proper Thickness of Sand

will, however, prevent this Accident. The Metal or Pattern should be made of Brass or hard Pewter, and must be a little larger and thicker than the Speculum intended to be cast from it; as the Thing cast is always a little less than the Pattern, owing to its contracting, a small Degree, in cooling. A wooden Pattern will not quit the Sand near so well as one made of Metal; besides Wood will always warp by the Moisture of the Sand, and consequently will give a false Figure or Form to the intended Speculum. As the Composition I have given for the Speculum is the *hardest*, and consequently the most brittle of any Metal yet known; so it is the most difficult to cast. The common Manner of casting other Specula will not avail, in the least Degree, here; and it was a very considerable Time before I found out a certain and infallible Way to cast them free from Faults or Flaws in the Face. In general they cracked in the cooling, from the Moisture of the Sand. The only Method possible to cast them well (for indeed I have tried many Methods) is to cast them with the Face *downwards*. The Ingate or Git should be at the Back of the Metal, and at the very Edge of it; its Breadth, where it joins the Metal, should be at least Half the Diameter of the Metal, and its Thickness must be Half the Thickness of the Metal at the Edge; the upper Part of the Git should contain as much Metal, at least, or even more, than the Speculum itself. I could give my Reader sufficient Reasons for every Part of the Process above directed, but I might be thought too tedious: Suffice it then that I inform him, that he will find these Directions will answer in Practice;
and

and I believe, I can say, that no one whatever can cast Specula, of this brilliant and brittle Composition, by any other Means than what I have now pointed out. When the Pattern, with its Ingate or Git, is taken out of the Sand, Ten or a Dozen small Holes should be made through the Sand, at the Back of the Mould, with a small Wire or common Knitting-needle, to permit the *Air* to escape, as the Metal is poured into the Mould. I have found by Experience, that several small Holes are infinitely better, for that Purpose, * than One large Hole. When the Metal is melted a Second Time, which must be done with as small a Degree of Heat as possible, add the proportional Quantity of crude Arsenic in coarse Powder, and stir it well with a wooden Spatula; when the Fumes are gone off, take the Metal off the Fire, take away the Dross, and add Half an Ounce or an Ounce of powdered Rosin, or equal Parts of powdered Rosin and Nitre, in order to give the Metal a good Face; stir it well with a Stick, and pour it immediately into the Flasks. When the Git is filled up with the fluid Metal, strike the Flasks gently, so as to shake or jog the Metal in them in a small Degree; this will prevent any Flaws in the Face from any Air-bubbles being lodged there. When the Metal has remained in the Flasks for a few Minutes, so as to become entirely solid, open the Flasks while the Metal is red-hot (it cannot

* If several small Holes are made for the Air to escape, the Back of the Metal will be cast much neater than if One Hole only is used for this Purpose. Besides, when One Hole only is used to let the Air escape, the Metal is very apt to crack in that Place, owing to the Sinking of the Metal in cooling.

crack

crack in this State, though it is exposed to the Air, as all Metals are malleable when they are red-hot) and take out the Speculum with a Pair of Tongs, laying hold of it by the Git, but take Care to keep the Face downwards to prevent it from sinking. Force out the Sand from the Hole in the Middle of the Mirror, with a Piece of Wood or Iron, and place the Speculum in an Iron Pot with a large Quantity of hot Ashes or small Coals, so as to bury the Speculum in them a sufficient Depth. If the Sand is not forced out of the Hole, in the Manner above directed, the Metal, by sinking as it cools, will embrace the Sand in the Middle of the Speculum so tight as to cause it to crack before it becomes intirely cold. And if the Metal is not taken out of the Sand, and put in a Pot with hot Ashes or Coals to anneal it, I can assert, that the Moisture from the Sand will always break the Metal. Let the Speculum remain in the Ashes till the Whole is become quite cold. The Git may be easily taken off by marking it round with a common fine half-round File, and giving it then a gentle Blow. The Metal is then to be rough-ground and figured.

Of the rough-grinding and figuring the Speculum.

IN rough-grinding, figuring, and polishing the Metal *Two* Tools only are necessary, besides a common Grindstone. One chief Reason why Workmen do not give a good Figure to their Specula, is because, by pursuing Dr. *Smith's* or Mr. *Mudge's* Method, they use too many Tools, which in a great Measure destroy each other's Effects. As
Nature

Nature always acts in the most simple Manner, so if we could always imitate her in this Respect we should arrive at a much greater Degree of Excellence in most of our mechanical Pursuits. Besides, the Tools generally made Use of by Workmen are considerably too large in Diameter, ever to give a correct and uniform Figure. All the Tools I make Use of are a Rough-grinder composed of Lead and Tin mixed together, or else of Pewter; this Rough-grinder serves also for a Polisher; this Tool, with a Bed of Stones or Hones, are all that are necessary. A Bruiser (as directed by Dr. *Smith* and Mr. *Mudge*) is totally unnecessary, causes considerable more Work, and, after all, is really detrimental. The best Method I have ever found to rough-grind the Speculum, is to grind the Surface of it quite bright upon a * common Grindstone, made nearly to the Figure or Focus of the Speculum by a Gage. Take it then to a convex Tool made of Lead and Tin, or else of Pewter, and grind the Metal upon it with fine Emery. This Emery, however fine it may be, will break up the Metal very much; but we can easily cure that Process, as I shall shew hereafter. This Tool or Rough-grinder should be made of an *elliptical Form*, and not circular (for a Reason I shall point out hereafter) and of such Dimensions that the shortest Diameter of the Ellipse shall be equal in Breadth to the Diameter of the Mirror, and the longest Diameter of the elliptical Tool should be to the shortest Dia-

* The Grindstone may easily be brought to the Form of the Gage, by holding the sharp Edge of an Iron Bar against it, while it is turned round, till so much is worn away from its Surface, as shall cause it to take the true Curvature of the Gage.

meter in the Proportion of 10 to 9 accurately, for a Reason to be mentioned hereafter. The Manner of working or figuring the Metal upon this Tool, and indeed upon all the succeeding Tools, is taught in Dr. *Smith's* Optics, or the before-mentioned Volume of the Philosophical Transactions. I shall refer my Reader to those Publications, as I only mean to give *my own* Improvements. When the Metal is brought to a true Figure, it must be taken to a convex Tool, formed with some Stones from a Place called *Edgedon*, in *Shropshire*, situated between *Ludlow* and *Bishop's Castle*. These Stones or Hones are of a fine Grain, and will easily cut the Metal and bring it to a fine Face. Indeed the blue * Hones, used in general by the Opticians for this Purpose, will scarce touch the Metal, and it will be a laborious Undertaking to bring the Metal to a fine Face, so as to take out all the Breaks up from the Emery, by the common blue Hones. By Means, however, of the above-mentioned Stones they may easily be ground and truly figured. The Bed of Stones should be of a circular Figure, and but very little larger than the Metal intended to be figured upon it; viz. about Two Tenths of an Inch, but not more, for a Speculum of Four or Five Inches in Diameter. If the Tool is made considerably larger than the Metal, it will grind the Metal perpetually into a larger Sphere, and by no Means of a good Figure: If the Metal and Tool are of the same Size exactly, the Metal will work truly spherical; but it is apt to shorten its Focus less and less, unless the Metal and Tool are worked

* Should any one however make Use of the common blue Hones, he should use as little Water as possible when the Metal is put upon them, as they will cut much better when barely wet, than if much Water is used upon their Face.

alternately

alternately upwards. It had, therefore, better be made a little * larger than the Mirror, when it will not alter its Focus. Too much Water should not be used at a Time upon the Hone Pavement, or the Figure will be very bad, which may easily be seen by the Face of the Metal appearing of different Degrees of Brightness in different Parts of it. When the Metal is brought to a very fine Face and Figure by the Bed of Stones, it is ready to receive a Polish: But before I shall give my Directions concerning the Manner of polishing it, I must mention a Circumstance or two I had inadvertently passed over. The Metal must not be cast too thick, or it will never take the parabolic Figure intended to be given to it. The best Proportion I have found for this Purpose is, a Metal of $4\frac{1}{4}$ Inches Diameter and 18 Inches Focus should be Four Tenths of an Inch thick at the Edge of it: The Back of the Mirror should be convex to strengthen it, and to cause it to spring and adhere to the Polisher uniformly. Its Convexity should be equal to its Concavity on the Face, that the Metal may be every-where of an equal Thickness. The Handle should be made of Lead, of the same Convexity and Concavity as the Metal, its Thickness about double that of the Metal, and its Diameter Three Fourths of that of the Speculum; it should have a Hole in the Middle, with a Copper or Iron Screw on it, so as to put it, together with the Mirror, to which it is fastened with Pitch, on a Collar Lathe, in order to smooth and finish the Edge of the Metal, which may be done by holding a fine File to it, when in the Lathe, at the first, and afterwards one of the above-mentioned Stones.

* About One Twentieth-part greater in Diameter.

Of polishing the Metal, and giving it the true parabolic Figure.

THE Rough-grinder of an *elliptical* Form is now to be covered with common Pitch. I generally make my own Pitch by boiling Tar in a Ladle, or Crucible, over a very slow Fire, till it becomes of the Consistence I require; for a great Nicety is required in the Degree of the Hardness of the Pitch. The harder the Pitch is the better Figure it will give to the Metal, as it does not alter its Figure in working as soft Pitch does; besides the Metal will acquire a Lustre upon a Polisher moderately hard, so as to shew Objects reflected from it as vivid and as near their natural Colour as possible; but, if the Pitch is too soft, some of its finest Particles will always adhere to the Face of the Metal, and form a very fine and thin Cuticle or Covering upon its Surface. This Circumstance is rendered very evident by viewing any white Object in the Metal (a Sheet of white Paper, for Example) when that fine Cuticle or thin Surface of the Pitch upon the Speculum will cause it to shew the Object of a dingy brown Colour, and not of its genuine Whiteness. Pitch may be easily made harder by adding to it a proper Quantity of Rosin. I often use equal Quantities of Pitch and Rosin, so as to make the Mixture just so hard when cold as to receive an Impression from a moderate Pressure of my Nail. A Polisher made with Pitch and Rosin has this Advantage; viz. though it is hard, yet it is not so brittle as when Pitch only is used, and made hard by boiling it, and consequently not so liable to break or chip off at the Edges, and thereby scratch the Metal. Pour the melted Pitch and
Rosin

Rosin, when pretty cool, from the Crucible upon the * elliptic Tool, so as to cover it every where when spread upon it with an Iron Spatula, about the Thickness of a Half-crown Piece. If the Covering is too thin it will continually alter its Figure, by the Heat it acquires in working the Metal upon it, and thereby give a bad Figure also to the Speculum. When it is somewhat cool, lay a Piece of Writing Paper upon the Surface of the Pitch, and gently press the Mirror upon the Paper; instantly pull the Paper from off the Pitch, after you have pressed the Mirror upon it, else it might adhere to the Pitch, and you will find the Polisher will be nearly figured to the Form of the Speculum. If it has not taken an exact Figure every where, which would appear by the fine Marks of the Grain of the Paper upon the Pitch, gently warm the Surface of the Pitch, and repeat the Operation as before, till you have formed it of the † exact Figure of the Metal. With a Penknife take away now all the superfluous Pitch from the Edge of the Polisher, and with a conical Piece of Wood form the Hole in the Middle accurately round: In other

* The elliptic Tool must be made pretty warm, or the Pitch will not adhere to it.

† When the Polisher is brought to its true Figure, gently warm it at the Fire, and with the Edge of a Knife divide it into several Squares by pressing the Edge of the Knife gently upon the Pitch; these Squares, by receiving the small Portion of the Metal that works off it in polishing, will cause the Figure of the Speculum to be more correct than if no such Squares had been made. — The Polisher may also be formed, without the Writing-paper, by dipping the Mirror into cold Water, and afterwards pressing it upon the Surface of the Pitch (when it is somewhat cool) and by repeating this Operation till it has taken the exact Figure of the Metal.

Words, let the pitchy Surface be every where of the exact Size and Shape as the Lead Tool which is under it. It may be necessary to mention that the Hole in the Middle of the Polisher should go quite through the Tool (for a particular Reason) and should be made of the same Size, or somewhat less, than the Hole in the Middle of the Speculum. This is a necessary Caution, and indeed I have always found that small Mirrors, without any Hole in the Middle, will polish much better and the Figure will be more correct, if the Polisher has a Hole in the Middle of it. The Powder I prefer above all others to give a most exquisite Lustre, is *Colcothar of Vitriol* and not *Putty*. *Putty* gives Metals a white Lustre, or, as Workmen call it, a Silver Hue; but good *Colcothar of Vitriol* will polish with a very fine and high black Lustre, so as to give the Metal finished with it the Complexion of polished Steel. To know if the *Colcothar of Vitriol* is good, put some of it into your Mouth, and if you find it dissolves away it is good; but if you find it hard and cranch between your Teeth, then it is bad and not well burned. Good *Colcothar of Vitriol* is of a deep red or a deep purple Colour, and is soft and oily when rubbed between the Fingers: Bad *Colcothar of Vitriol* is of a light red Colour, and feels harsh and gritty. The *Colcothar of Vitriol* should be levigated between Two Surfaces of polished Steel, and wrought with a little Water; when it is worked dry you may add a little more Water to carry it lower down to what Degree you please. When the *Colcothar of Vitriol* has been wrought dry Three or Four Times, it will acquire a black Colour, and will be low enough or sufficiently

sufficiently fine to give an exquisite Lustre. This levigated Colcothar of Vitriol I put in a small Phial, and pour some Water upon it, and afterwards I use it for polishing the Metals in the same Manner that washed Putty is always directed to be made Use of for that Purpose. I always put on a large Quantity of washed Colcothar of Vitriol at once, so as to saturate the Pitch and form a fine Coating of the Colcothar, and very rarely make Use of a Second Application. If a second or third Application of Colcothar should be found necessary to bring the Metal to a high Lustre, or to take out any Scratches upon its Face, use it very sparingly, or you will destroy the Polish you have already attained. When the Metal is nearly polished, it will always generate some black Mud upon the Surface of the Mirror, and also upon the Tool. Wipe it now away from the Face of the Metal, with some very soft Wash-leather; though if too much of this Mud be taken away, it will not polish so well. Indeed a little Experience in these Matters will better suffice than a Volume written upon the Subject.

In regard to the *parabolic Figure* to be given to the Metal, no particular Caution is required in the polishing; the *elliptical Tool* will always cause the Speculum to work into an accurate parabolical Figure, supposing the transverse and conjugate Diameters bear the true Proportion to each other, and the Metal is not too thick to prevent it always from adhering firmly and uniformly to the Polisher. Should the Pitch prove too soft, it will give way, and alter the Figure a little. This Circumstance will render the Figure of the Mirror sometimes a small Degree short of the Parabola, and sometimes
a very

a very little beyond it; but by a little Perseverance the correct Figure is very easily acquired. I could very easily give the Reader the Reason why an *elliptical Tool* of a proper Proportion will always give a parabolical Figure; and, if the transverse Diameter is increased, it will then always give an hyperbolical Figure; but as I am writing upon the *practical* Part of making Reflecting Telescopes, and not the *Theory*, I will not offend his Patience. To convince any one of the Certainty of my Assertions; let him polish a Metal $2\frac{1}{2}$ Inches Diameter and $9\frac{1}{2}$ Inches Focus, upon an *elliptical Tool*, whose Diameters are $2\frac{1}{2}$ and 3 Inches, and I can assert he will always find the Metal, when polished (if it is not too thick) *beyond* the Parabola, or it will always prove hyperbolical. If he polishes it upon a *circular Tool* in the common Way, with cross Strokes in every Direction possible, using first a few round Strokes every Time he changes his Position, he will find it will always prove spherical, and consequently *short* of the Parabola. A very little Experience in these Matters will convince any one of the Ease and Certainty of giving the great Speculum a parabolic Figure by polishing it in a common Manner only, with cross Strokes in every possible Direction, upon an *elliptical Tool* of the proper Dimensions, in which, for common Foci and Apertures; viz. $2\frac{1}{2}$ to $9\frac{1}{2}$ Focus, or 3,8 Inches in Diameter to 18 Inches Focus, the Diameters should be 10 to 9. The shortest Diameter of the *Ellipse* being accurately the same as the Diameter of the Metal, and the longest Diameter of the *Ellipse* to the shortest Diameter as 10 to 9.

Ludlow,
July 19th, 1781.

JOHN EDWARDS. +

A P P E N D I X.

An Account of several Compositions of Metals and Semi-metals, on which Trials were made to find out the most proper Mixture for the Specula of Reflecting Telescopes,

By the Rev'd JOHN EDWARDS, B. A.

- 1 **C**OPPER and Tin equal Parts—very bad, soft, and of a blue Colour.
- 2 D^o with Arsenic $\frac{1}{8}$ —but little different from the 1st.
- 3 Tin 2, Copper 1—much worse than the preceding ones.
- 4 Copper 32, Tin 16, Arsenic 4, Nitre 4—black and brittle.
- 5 Copper 6, Tin $1\frac{1}{4}$, Arsenic 1—very indifferent.
- 6 Copper 32, Tin 14, Arsenic 2—a very good Metal.

Note, By Tin, I always mean Grain-tin.

4 The Nitre was added to fix the Arsenic.

7 Copper

- 7 Copper 32, Tin $13\frac{1}{2}$, Arsenic 1—not quite so good as 6th.
- 8 Copper 32, Tin $13\frac{1}{2}$, Arsenic $1\frac{1}{2}$ —a good Metal.
- 9 Copper 32, Tin 15, Arsenic 2—much better than any of the above.
- 10 Copper 6, Tin 2, Arsenic 1—compact, but very yellow when polished.
- 11 Copper 3, Tin $1\frac{1}{4}$ —compact, and whiter than the 10th.
- 12 Copper 32, Tin $14\frac{1}{2}$ —a pretty good Metal, but polishes too yellow.
- 13 Copper 32, Tin 15, Arsenic 2, Flint-glass in Powder 3—very bright, but rotten.
- 14 Brass 6, Tin 1—compact, but too yellow.
- 15 Two Parts of 11th Composition and 1 Part of 14th Composition—compact, but much too yellow when polished.
- 16 Brass 5, Tin 1—somewhat whiter than 14th.
- 17 Brass 4, Tin 1—a good Metal, but rather yellow.

13 Flint Glass was added as a Flux. See *Shaw's Chymistry*, p. 255.

Note, The 10th is the Composition of Sir *Isaac Newton*. See Appendix to *Gregory's Optics*, p. 221. The 11th, 14th, and 15th are the Compositions of Mr. *Molyneux*. See *Smith's Optics*, Vol. II. P. 304. And the 12th is the Composition of Mr. *Mudge*. See *Philos. Trans.* Vol. LXVII. P. 298.

19 and 21. These Compositions are mentioned by *Neri* and *Kunckell* in *Neri's Art of Glass Making*. Surely they never tried those Compositions themselves, but took them upon the Report of other Authors, as the 19th will not take a good Lustre, and the 21st is very soft like hard Pewter, therefore highly improper for Specula, which should be as hard as possible.

- 18 Brass 4, Tin 1, with Arsenic $\frac{1}{10}$ — whiter than 17th.
- 19 Brass 3, Tin 1—will not polish well.
- 20 Brass 2, Tin 1—of a sparry Nature.
- 21 Tin 3, Brass 1—too soft, being only a Kind of hard Pewter.
- 22 Brass and Arsenic equal Parts—a dirty white Colour.
- 23 Brass, Copper, and Arsenic equal Parts—a dingy white.
- 24 Brass and Platina equal Parts—very difficult to fuse and mix well together, is then malleable, and of a dingy white Colour like 22d Composition.
- 25 Copper 32, Tin 14, Crude Antimony 4—black and rotten.
- 26 Copper 32, Tin 14, Crude Antimony 1—bluish and rough-grained.
- 27 Copper 32, Tin 15, Arsenic 4, Bismuth 2—much too rotten.
- 28 Copper 32, Tin 15, Arsenic 3, Bismuth 1—much too yellow when polished, and appears also porous.
- 29 Copper 2, Zinc 1—a pale malleable Metal.
- 30 Copper and Zinc equal Parts—still malleable and rough-grained.
- 31 Copper 32, Tin 15, Arsenic 4, Zinc 4—a good Metal, but does not take a high Lustre.
- 32 The 31st Composition fluxed with Corrosive Sublimate—a compact and hard Metal, but rather yellow when polished.

- 33 Copper 32, Tin 16—a most beautiful brilliant Composition, but much too brittle and rotten.
- 34 Copper 32, Tin 17—bluish and rough-grained.
- 35 Copper 32, Tin 18—almost black and rough-grained.
- 36 Brass 2, Zinc 1—nearly a Gold Colour.
- 37 Brass and Zinc equal Parts—a pale Gold Colour and rough-grained.
- 38 Spelter 4, Tin 1—very rotten.
- 39 Copper and Crude Antimony equal Parts—of a sparry Nature.
- 40 Copper 32, Tin 15, Arsenic $\frac{1}{4}$ of the Whole—a very beautiful and brilliant Metal, but tarnishes when exposed for some time to the Air.
- 41 Silver and Bismuth equal Parts—a yellowish white Metal, and not much harder than Silver itself.
- 42 Silver and Tin equal Parts—a white Metal almost like Silver itself, and much too soft for Specula.
- 43 Silver, Tin, and Bismuth equal Parts—a dingy white Colour, but much harder than 41 or 42.
- 44 Copper 32, Tin 15, Silver 1—a beautiful compact Metal, but polishes rather too yellow.
- 45 Copper 32, Tin 15, Silver 2—not so white as 44.
- 46 Copper 32, Tin 16, Brass 4, Arsenic 2—rather too much Tin as the Composition was of a bluish Complexion and rough-grained.

33 Unless the Copper is very pure, this Composition will be of a dark blue Colour, as 15 Ounces of Grain Tin will generally saturate Two Pounds Weight of Copper.

47 Copper

- 47 Copper 32, Tin 15, Brass 1, Silver 1, Arsenic 1—a most excellent Metal, being by much the whitest, hardest, and the most reflective I have ever yet met with.
- 48 Common Bell-metal—polishes very yellow.
- 49 Common Bell-metal 4, Regulus of Antimony 1—bluish and rough-grained.
- 50 Common Bell-metal 6, Regulus of Antimony 1—still bluish and rough-grained.
- 51 Copper 32, Tin 14, Reg. Antim. $\frac{1}{10}$; viz. 1 oz. to 1 lb.—too much Antimony, it being of a bluish Colour and rough-grained.
- 52 Copper 32, Tin 13, Reg. Ant. $\frac{1}{10}$ —bluish and rough.
- 53 Copper 32, Tin 13, Reg. Ant. $\frac{1}{32}$; viz. 1 oz. to 2 lb.—a very fine Metal in Appearance like 33.
- 54 Copper 32, Tin 13, Reg. Ant. $\frac{1}{40}$; viz. 1 oz. to 2 $\frac{1}{2}$ lb. a beautiful Metal not much unlike 47, but not quite so white.
- 55 Crude Antimony 16, Cawk-stone 1 or 2 oz.—a very bright glassy Metal like the common

47 This Metal, when broken, should appear of a bright, glassy, and Quicksilver Complexion. If it appears hard and of a dead white, more Tin must be added (the Copper will sometimes take 16 Ounces of Tin, if it is very pure). If it appears bluish and rough, more Copper or Brass must be added.

49 The common Bell-metal is not a Mixture of pure Copper and Tin, but Tin mixed with Copper Ore, a little purified, before it is brought into pure Copper.

55 See this most wonderful Stone, and its strange Effect upon Antimony described in the Philosophical Transactions, N^o 110. For this Stone I am much obliged to Sir JOSEPH BANKS, President of the Royal Society, who favoured me with many Ounces of it.

Vitrum Antimonii, but by no Means fit for Mirrors.

56 Copper 32, Tin 16, Vitrum Antimonii made from the Cawk-stone 1 oz.—a very indifferent Composition, as the Vitrum Ant. did not differ in its Effects from Crude Antimony.

57 Copper 32, Tin 14, Lead 2—no Art can make this Composition mix intimately, as the Lead will always separate from the Copper and Tin.

58 Copper 32, Tin 16, Reg. of Ant. 3—black and much too rotten.

59 Copper 32, Tin 16, Iron Filings 8 — a bluish grey Colour and rough-grained, and appeared somewhat like Steel when broken through.

60 59th Comp. 8 oz. Tin 1 oz.—a little whiter than 59th, but still too blue.

61 Equal Parts of 59 and 60—still of too blue a Colour, and not close-grained.

62 Copper 32, Tin 16, Arsenic 3, Iron Filings $\frac{1}{4}$ of an oz.—a pretty brilliant Composition, but much inferior to 47.

63 Platina 1 oz. Brass 1 oz. Cawk-stone, red hot, $\frac{1}{2}$ oz.—excessive difficult to fuse, and of a dirty light-brown Colour, and somewhat malleable.

64 Copper 32, Tin 16, Iron-filings 4, Reg. Ant. 4, and fluxed with Corrosive Sublimate—an exceeding hard and compact Metal, but of too blue a Colour.

62 In all Compositions with Iron in it, the Mixture will not run sufficiently fluid.

64 The Regulus of Antimony was added here to dissolve or cause to melt the Iron-filings.

65 Copper

- 65 Copper 2 oz. Tin 1 oz. Iron-filings 1 dr.
Reg. Ant. 1 dr.—too blue a Colour and
rough-grained.
- 66 Regulus of Antimony and Tin equal Parts—
sparry and not fit for Mirrors.
- 67 Cast-steel—will not polish upon Pitch either
with Putty or Colcothar of Vitriol.
- 68 Steel 1, Tin $\frac{1}{4}$ —very rough-grained and bluish,
and not much different from Steel itself.
- 69 Steel 1, Tin 1—rough-grained and of a bluish
Colour.
- 70 Steel 1, and 47th Comp. 20 Parts—rough-
grained and not near so good as 47.
- 71 Steel 1, and 47th Comp. 30—not much different
from 47th Comp. but not so beautiful and
close-grained.

Many other Mixtures were tried, by combining the foregoing Compositions in more than a hundred Variety of Proportions; but none of them were found equal to N^o 47, as that Mixture forms a Metal that is the whitest, hardest, most reflective, and takes the highest Lustre of any Thing I have yet seen.

68 The Steel was melted by a Furnace of a particular Construction, built on Purpose, as it would not melt in a Crucible and a common Air-furnace.

Of the Eye-glasses of Reflecting Telescopes.

THE Kind of Glass most proper for the Eye-glasses of Reflecting Telescopes is *Crown Glass*, such as is used for the convex Glasses in the compound Object-glass of Acromatic Telescopes; and those Pieces are the best, which, when laid upon a Sheet of white Paper, shew it of a *bluish green* Colour, and not of a *yellowish green*. *Crown Glass* is much preferable to *Flint Glass*, or indeed any other Sort of Glass we are acquainted with, for this Purpose; as it intirely destroys, by its Colour, all dingy or yellowish Appearance of Objects in Reflecting Telescopes (which may arise from the Metals not being sufficiently white, or from a bad Polish) and shews them of their natural Colour. The dingy Appearance of Objects in the Reflecting Telescope is highly disagreeable, but this will be entirely removed if the Metals are made of the 47th Composition, and the Eye-glasses are formed of *Crown Glass*. Even *Flint Glass*, when used for the Eye-glasses to Reflecting Telescopes, will always shew Objects too yellow, as neither the *Flint Glass* nor the Metals are sufficiently white. But the Combination of the Colour of the *Crown Glass*, and of the Light reflected from the Metals, will always shew Objects of their true natural Colour, and totally free from all dingy or yellowish Tinge. I must add also that *Crown Glass* is much more free from Veins than *Flint Glass*, and therefore much preferable. I have also been informed by a Gentleman of *Stourbridge*, in *Worcestershire*,
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who is a Glass-maker, that *Crown* Glass is the most pure Glass made in this Kingdom, and also transmits more light than even *Flint* Glass, as Objects may be seen through a much thicker Piece of *Crown* than *Flint* Glass. This Circumstance may perhaps be owing to the Quantity of Lead which enters the Composition of *Flint* Glass, which, by rendering it more dense than any other Kind of Glass, makes it reflect more, and consequently transmit fewer Rays of Light. Be this as it will, I can affirm from my own Experience, that *Crown* Glass is much preferable to *Flint* Glass for the Eye-glasses of all Reflecting Telescopes.

To try the Figure of the great Speculum.

MR. Mudge, in the Philosophical Transactions, has given a Method to try the Figure of the great Speculum (for the small Mirror is always spherical) by circular Apertures of PASTEBOARD applied to the Mouth, or the Object End of the Telescope; but this End may be much more easily obtained, without the Trouble of using Diaphragms of PASTEBOARD, barely by looking through the Telescope, and by viewing, at a proper Distance (50 or 100 Yards, for Instance) a Circle of Half an Inch or an Inch in Diameter, with a pretty broad black Margin to it. Adjust the Telescope so as to shew the Circle as distinct as possible; turn then the Screw which moves the small Mirror, either to the Right or Left Hand, and you will see a regular dark Haze round the Circle, becoming broader and broader as you continue turning the Screw: Then if the Haze is more distinct, and the Edge
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of it better defined, when you turn the Screw from the Place of distinct Vision towards the Right Hand, than when it is turned from distinct Vision towards the Left Hand, the Figure of the great Metal is *spherical*; if the black Haze is most distinct when the Screw is turned towards the Left Hand, it is *hyperbolic*, or beyond the Parabola; but if the Haze and the Edges of it are equally distinct on both Sides the true Focus or Point of distinct Vision, which the Eye will judge most accurately, then, in such Case, the great Speculum has the true *parabolic* Curve required. These, and the following Directions concerning the Method to center the Mirrors, are suited to a GREGORIAN Reflector, but for a CASSEGRAIN Telescope they must be reversed.

To center the Mirrors.

IT is of the utmost Consequence to the Perfection of Reflecting Telescopes that the Mirrors be truly parallel to each other, and also that the Centers of them, together with the Centers of the Eye-glasses be all in one direct Line; viz. in the Axis of the Tube. Indeed, unless these Particulars are attended to, the Instrument will prove defective and faulty, even though the Mirrors have the most exquisite Figure possible given to them. That truly excellent Artist, the late ingenious Mr. *James Short*, always took the greatest Care to adjust and center the Metals of his Telescopes; and, to prevent them from being deranged by any Accident, he always marked the upper Part of the great Mirror by a black Line, and fastened the Screws on the Back of the small Metal with common soft Solder. Mr. *Mudge*, in
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the Philosophical Transactions, very justly advises us to turn the great Mirror in its Cell, and examine in what Situation it is most distinct : But he has given us no Directions how we are to place the Metals parallel to each other, at the same time that their Centers are exactly in the Axis of the Tube. To supply these Omissions, I shall now point out such Methods as I have always found excellent for those Purposes.

I. *To adjust the Arm which carries the small Speculum.*

Extend Two fine Threads or Wires across the Aperture of the Tube at right Angles, so as to intersect each other exactly in the Axis of the Telescope ; before the Arm is finally fastened to the Slider, place it in the Tube, and through the Eye-piece (without Glasses) the Intersection of the Cross-wires must be seen exactly in the Center of the Hole of the Arm. When this Exactness is obtained, let the Arm be firmly rivetted and soldered to the Slider.

II. *To place the small Mirror parallel to the large Speculum.*

Divide the Circumference of the Mouth-piece of the Tube of the Telescope into Four equal Parts. Provide a Circle of Pasteboard about One Half or Two Thirds of the Diameter of the Mouth of the Tube. Procure also a narrow Strip of Wood, whose Length is exactly equal to the Inside Diameter of the Mouth of the Tube ; divide it into Two
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equal Parts, and to this Middle Point fasten the Center of the PASTEBOARD Circle by a small Pin. Apply now this small Apparatus to the Two opposite Marks made on the Mouth of the Tube; by this Means the Center of the PASTEBOARD Circle will coincide with the Center of the Tube. Care also must be taken that the PASTEBOARD Circle be in the same Plane with the Mouth of the Telescope, or, which is the same Thing, at right Angles to its Axis; which is easily effected by applying the Edge of a Ruler across the Mouth of the Telescope, and by making any of the Diameters of the PASTEBOARD Circle touch the Edge of the Rule. Take now the Eye-glasses from the Eye-tube, and screw that Tube, without its Glasses, in its proper Place: Direct then the Mouth of the Telescope towards a Window or the Sky, apply your Eye to the small Hole in the Eye-tube, and observe whether the Ring of Light in the small Mirror is exactly of the same Breadth in every Part of it, which will always be the Case when the small Metal is parallel to the great Speculum; in all other Positions of the small Speculum, the Ring of Light in it (which is only the reflected Image of that Part of the great Mirror which is not hid by the PASTEBOARD Circle) will appear of different Breadths in different Parts of its Circumference: Adjust now the small Mirror by the Three Screws at its Back, till the Ring of Light appears, in every Part, exactly of the same uniform Breadth; and thus, by a few Trials, the Face of the small Metal may easily be placed parallel to the Face of the great Speculum.

III. *To place the Center of the small Mirror in the Axis of the Tube.*

Put the circular Pasteboard on the Mouth of the Tube, as before; then apply the Eye to the Eye-hole (the Eye-glasses being removed) and observe whether the outer Edge of the Ring of Light in the small Mirror, when adjusted by the preceding Rule, is equi-distant in every Part of its Circumference from the Edge of the small Metal: In such Case, the Center of the small Mirror is coincident with the Axis of the Telescope; but if the outer Edge of the Ring of Light in the small Speculum is nearer to the Edge of it in some Part of its Circumference than in others, or, in other Words, if the dark Part surrounding the Ring of Light in the small Speculum has not the same Breadth in every Part of its Circumference, then the Center of the small Metal is not coincident with the Axis of the Tube, but must be raised higher or depressed lower, must be put towards the Right Hand, or towards the Left, as shall appear necessary. The easiest Method to perform this, is to make the Screw, which goes through the Hole in the upright Stem of Brass which carries the small Metal, with a broad Shoulder to it, and to make the Hole in the Center of the Brass Stem pretty large (but not so large as the Shoulder of the Screw) by which Means the small Mirror may be raised or depressed, may be placed a little to the Right Hand, or towards the Left, as is found to be most proper, and may be retained in any of those Positions by the three small Screws that bear against the Back of

the small Speculum.—This and the preceding Adjustment must be repeated by Trials, till the Ring of Light in the small Mirror is of One uniform Breadth in every Part of its Circumference, and, at the same Time, the outer Edge of the Ring of Light is equi-distant from the Edge of the small Metal; for then, and then only, the Face of the small Mirror is parallel to the Face of the great Speculum, and, at the same Time, its Center is coincident with the Axis of the Tube; or the Centers of the Eye-glasses, and the Centers of the great and small Specula, are in One right Line.

N. B. When the small Mirror has been adjusted, by the preceding Directions, those two Adjustments may be examined and rectified to the utmost Degree of Precision by the following Method.

Put up a Circle of Half an Inch or an Inch in Diameter, with a broad black Margin to its Circumference, at the Distance of Fifty or a Hundred Yards from the Telescope. Turn the Screw, which carries the Brass Stem and the small Mirror, nearer to or farther from the great Speculum, and you will observe, if the Metals are centered very well, the Margin of the Circle will appear to become less and less, so as to form continually a less Circle, till at last, as you continue turning the Screw, it will terminate in a black Spot in the Middle of the true Circle (which will still continue visible) with a large broad and black Haze round it, equally broad in every Part of it. If the black Spot appears on the Margin of the true Circle, and consequently the black Haze is not equally broad round the true Circle, then the Mirrors are not exquisitely centered,

centered, but the small Metal must be adjusted by the three small Screws at the Back of it, by screwing up, in a very small Degree, the small Screw which is diametrically *opposite* the black Spot, or on the other Side the Center of the Circle on whose Margin * the Spot appears. When the Metals are found to be exquisitely centered, fasten the three small Screws at the Back of the small Speculum, with common soft Solder, to prevent them from drawing, or giving Way. Put up now a Watch Paper, or any other printed Paper, with Letters or Figures upon it of different Dimensions, some of which should be very small, at the Distance of at least Sixty Times the focal Length of the great Speculum from the Telescope. Turn the large Mirror in its Cell, about the Eighth Part of a Revolution each Time, and observe in which of those Positions the minute Figures or Letters upon the Paper are most distinct: Mark then, with a black Stroke, the upper Part of the Back of the great Speculum, and a corresponding Part upon the Inside of the Brass Tube, adjoining to the black Stroke on the Back of the Mirror; by which Means, if the great Speculum is taken out of its Cell at any Time, it may easily be replaced exactly in the same Position.—The Mirrors may also be examined by Means of any of the fixt Stars,

* When the Metals are centered exceeding near, but not accurately true, the true Margin of the Circle will appear too broad in some One Part of its Circumference; that is, the black Line, forming the Circumference of the true Circle, will not appear equally broad in every Part of it. In such a Case, screw up the small Screw at the Back of the small Speculum, which is *opposite* the Part of the Circumference of the Circle which appears too black, or too broad.

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particularly by those of the *First* Magnitude; for if the Mirrors are truly centered and adjusted to their best Position, a fixed Star, when made indistinct by the adjusting Screw on the Side of the Tube, should always appear, in Reflecting Telescopes, as a truly *round* Circle of Fire with a black Spot exactly in its Center; and when the Telescope is adjusted to distinct Vision, the Star should appear, if the Telescope is excellent, and the State of the Air favourable, exactly *round*, and totally free from all Irradiations, or false Rays and Glare. Indeed I can assert, from Experience, that no Object is so proper to determine the Excellence of Telescopes as the fixt Stars; as the least Irregularity in the Figure of the Metals in Reflecting Telescopes, or of the Object-glass in Acromatics, is rendered by them exceeding conspicuous by a false Glare, and by their not appearing perfectly *round*. The ingenious Mr. *Wm. Herschell* of *Bath*, F. R. S. a Gentleman well known in the astronomical World, has discovered near 300 *double* and *treble* Stars *, many of which are exceeding minute ones, and which, at the same Time that they will afford us an Opportunity to prove the Goodness of our Telescopes, shew the Excellence of his own †, and illustrate the Observation of the Royal Psalmist, that “*The Heavens declare the Glory of God, and the Firmament sheweth his Handy-work.*”

* See Philos. Transf. Vol. LXXII.

† The Diameter of the great Mirror of Mr. *Herschell's* longest Reflecting Telescope (which is of the NEWTONIAN Construction) is 12 Inches, its focal Distance is 20 Feet, and its magnifying Powers, for the fixt Stars, are from 300 to 6000 Times.

P O S T S C R I P T.

AS the following Table of the Apertures, Powers, and Prices of Reflecting Telescopes, constructed in the *Gregorian* Form, by the late ingenious Mr. *James Short*, is very scarce, it may not be unacceptable to my Reader, if I here insert it.

Number.	Focal Length in Inches.	Diameter of Aperture in Inches.	Magnifying Powers.	Prices. Guin.
1	3	1, 1	1 Power of ——— 18 Times	3
2	4 $\frac{1}{2}$	1, 3	1 ——— ——— 25 ———	4
3	7	1, 9	1 ——— ——— 40 ———	6
4	9 $\frac{1}{2}$	2, 5	2 ——— — 40 & 60 ———	8
5 }	12	3, 0	2 ——— — 55 & 85 ———	10
6 }	12	3, 0	4 ——— 35, 55, 85, & 110 ———	14
7	18	3, 8	4 ——— 55, 95, 130, & 200 ———	20
8	24	4, 5	4 ——— 90, 150, 230, & 300 ———	35
9	36	6, 3	4 ——— 100, 200, 300, & 400 ———	75
10	48	7, 6	4 ——— 120, 260, 380, & 500 ———	100
11	72	12, 2	4 ——— 200, 400, 600, & 800 ———	300
12	144	18, 0	4 ——— 300, 600, 900, & 1200 ———	800

Mr. *Short*, in the above Table, *always* greatly over-rated the highest Power of his Telescopes. By *Experiment* they were found to magnify much less than expressed in his Paper. Mr. *Short* finished
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two or three Telescopes of the *Gregorian* Form, of 18 Inches Focus, with 4,5 Inches Aperture, and Power 170. He also made *one* Telescope, of the *Cassegrain* Form, of 24 Inches Focus, with 6 Inches Aperture, and Power 355. But it was very indistinct with that Power. The greatest Magnifier it bore, with sufficient Distinctness, was 231 Times. He also made six Telescopes of the same Focus of the *Gregorian* Form, which bore the usual magnifying Powers very well,

A TABLE

A TABLE of the Apertures, Powers, &c.
of Telescopes of the NEWTONIAN Construction,
in which the Figure of the Great Metal is sup-
posed to be truly *spherical*.

Foc. Dist. of Concave Metal.	Aperture of Concave Metal.	Sir Isaac Newton's Numbers.	Foc. Distance of Single Eye- Glas.	Magnify- ing Power.
Feet.	Inch. Dec.		Inch. Dec.	
$\frac{1}{2}$	0,86	100	0,167	36
1	1,44	168	0,199	60
2	2,45	283	0,236	102
3	3,31	383	0,261	138
4	4,10	476	0,281	171
5	4,85	562	0,297	202
6	5,57	645	0,311	232
7	6,24		0,323	260
8	6,89	800	0,334	287
9	7,54		0,344	314
10	8,16	946	0,353	340
11	8,76		0,362	365
12	9,36	1084	0,367	390
13	9,94		0,377	414
14	10,49		0,384	437
15	11,04		0,391	460
16	11,59	1345	0,397	483
17	12,14		0,403	506
18	12,67		0,409	528
19	13,20		0,414	550
20	13,71	1591	0,420	571
21	14,23		0,425	593
22	14,73		0,430	614
23	15,21		0,435	635
24	15,73	1824	0,439	656

As Telescopes of Sir *Isaac Newton's* Construction are now found (particularly by the late exquisite Observations of Mr. *Herschell* of *Bath*) to perform most excellently in the *Minutiae* of Astronomy, especially if small Apertures and long Foci are made Use of, I have added the foregoing Table, chiefly taken from Dr. *Smith's* Optics, vol. i. p. 148, and have continued it on from 17 to 24 Feet focal Distance of the great Mirror. I have also annexed to it Sir *Isaac Newton's* Numbers, by means of which the Apertures of Reflecting Telescopes, of any Construction, may be easily computed. See Appendix to *Gregory's* Optics, p. 229, or Philosophical Transactions, N° 81.

It may be necessary to mention, that the preceding Table was constructed by using the Dimensions of the Middle Aperture and Power of Mr. *Hadley's* excellent *Newtonian* Telescope as a Standard; viz. Focal Distance of great Mirror $62\frac{1}{2}$ Inches — Aperture of Concave Metal 5 Inches, and Power 208 Times. Mr. *Herschell* chiefly makes Use of a *Newtonian* Reflector, the focal Distance of whose great Mirror is 7 Feet, its Aperture 6,25 Inches, and Powers 227 and 460 Times, though sometimes he uses a Power of 6450 for the fixt Stars.

Note, If the Metals of a *Newtonian* Telescope are worked as exquisitely as those in Mr. *Herschell's* Seven Feet Reflector, the highest Power that such a Telescope should bear, with perfect Distinctness, will be given by multiplying the Diameter of the great Speculum by 74; and the focal Distance of the single Eye-glass may be found by dividing the focal

focal Distance of the great Mirror by the magnifying Power : Thus, $6,25 \times 74 = 462$ the Mag. Power ; and $\frac{7 \times 12}{462} = 0,182$ of an Inch, the foc. Dist. of the single Eye-glass required.

To grind and polish the small Speculum of a NEWTONIAN Telescope truly flat.

IT may perhaps be necessary to inform those who would wish to finish Telescopes of the *Newtonian* Form, that the small *elliptical* plane Mirror may be ground truly *flat* by making Use of Two or more Tools considerably larger than the Speculum intended to be finished upon them, after it is brought as near the Figure as can be done upon a small Tool of Lead with fine Emery. The Tools, or Beds of Hones, should be no less than Six Inches in Diameter. The Figure of the Tools is not allowed to be completed, till the Speculum can be first highly finished upon One of them, and afterwards be applied to another without receiving any Change. The last Half Dozen Strokes should be in the Direction of the longer Axis of the Ellipsis. When this is perfected, it must be polished upon the Pitch Polisher of a circular Form, whose Diameter is about *One-tenth* Part greater than the transverse Axis of the Speculum. For this Method of figuring the small Speculum truly *flat*, I am obliged to that excellent Astronomer Mr. *Herschell* of *Bath*.

To find, by Experiment, the magnifying Power of any Telescope.

MANY Methods have been contrived to determine experimentally the magnifying Power of any Telescope. That excellent Artist Mr. *Ramsden* shewed me, some time ago, a small Instrument, of his own Invention, to measure the Diameter of the emergent Pencil of Rays, at the Eye-hole, to the utmost Degree of Precision. By dividing the Diameter of the great Mirror in a Reflecting Telescope, or the Diameter of the Object-glass in a Refractor, by the Diameter of the emergent Pencil of Rays, determined by that Instrument, the magnifying Power will then be given. But as that Instrument, constructed chiefly upon the Principle of Mr. *Dollond's* Object-glass Micrometer, is somewhat * expensive, and therefore may not be found in the Hands of every One who is possessed of a Telescope; I shall lay down a plain and easy Method by which I could always discover the Powers of my Telescopes very readily and with sufficient Accuracy.

At the Distance of One or Two hundred Yards from the Telescope put up a small Circle of Paper of any determined Diameter, an Inch for Instance: Upon a Card, or any Piece of strong Paper,

* Mr. *Ramsden* informed me that the Price of One of his small Instruments to determine the Power of any Telescope would be about *Three Guineas*. Whether any other Optician makes these Instruments, as invented by Mr. *Ramsden*, I cannot tell, having never seen any other than that which Mr. *Ramsden* shewed to me.

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through which the Light cannot be easily transmitted, draw Two black parallel Lines, whose Distance from each other is exactly equal to the Diameter of the small Circle. Adjust the Telescope to distinct Vision, and through it view the aforesaid small Circle with One Eye, and with the other Eye, open also, view at the same time the Two parallel Lines. Let the parallel Lines be then moved nearer to or further from your Eye, till you see them appear exactly to cover the small Circle viewed in the Telescope. Measure now the Distance of the small Circle, and also of the parallel Lines, from your Eye. Divide then the Distance of the former by that of the latter, and you will have the magnifying Power of the Telescope required.

Two other Methods to determine, by *Experiment*, the Power of any Telescope are given in Dr. Smith's Optics, in the Notes upon Art. 109 and 485.

* *To determine the Size and Place of the Eye-hole in a single or compound Eye-piece of a Reflecting Telescope.*

IT is absolutely necessary for perfect Vision that the Eye should be applied to a small Hole of a certain Dimension placed exactly in the Focus of the single Eye-glass, if the Eye-piece consists of † One Glass only, or else in the compound Focus of the Glasses, if it is constructed with Two, as is most commonly practised. If the small Eye-hole is not exactly in the proper Place and also of the true Size, the Telescope will prove faulty, as it will always either take in foreign Light, and by that Means the Object will appear very indistinct, or else it will cut off many of the Rays which should come to the Eye, and then the Object will not appear so vivid as it ought to do. To rectify therefore its Size and Place let the following Rules be observed.

Let the Distance of the Eye-hole from the Eye-glass, if it is a single One, be put, as near as can be attained by Measure, equal to the focal Distance of the Eye-glass; but if it is a compound Eye-glass,

* These Directions might have been inserted, perhaps with more Uniformity, immediately after the Directions for *the Eye-glasses of Reflecting Telescopes*, p. 30; but as this Treatise is already set and corrected to this Place, I am necessitated to insert it here.

† Some Astronomers prefer an Eye-piece of One double convex Glass only for the higher Powers of their Telescopes, as it will transmit more Light than can pass through Two Glasses.—In Mr. *Herschell's* Telescopes of the *Newtonian* Form, the Eye-pieces for the greatest Powers consist only of One small double convex Glass.

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the Distance of the Eye-hole from the Glass nearest the Eye may be found thus: Multiply the Difference between the focal Distance of the Glass next to the Mirror and the Distance of the Two Eyeglasses by the focal Distance of the Glass nearest to the Eye, and divide this Product by the Sum of the focal Distances of the Two Glasses lessened by their Distance, and you will have the compound focal Distance required. Example. If the focal Distance of the Glass nearest to the Mirror is 3 Inches, the focal Distance of the Glass nearest the Eye is 1 Inch, and their Distance from each other is 2 Inches, then the compound focal Distance from the Eye-glass will be $\frac{3 - 2 \times 1}{3 + 1 - 2} = \frac{1}{2}$ an Inch.

The Diameter of the Eye-hole may also be determined by dividing the Diameter of the great Speculum by the magnifying Power of the Telescope. Thus, if the Aperture of the Telescope is 4 Inches and Power 150, the Diameter of the Eye-hole will be 0,027 of an Inch nearly, or $\frac{4}{150} = 0,02666$, &c.

Having now found the Place and Size of the Eye-hole *by Calculation* nearly, the true Place and Size must be determined *accurately by Experiment*, since our Measures of the Foci, Distances, &c. of the Glasses cannot be found with sufficient Accuracy.

With a small convex Glass of an Inch or an Inch and Half focal Distance view the Picture of the large Mirror in the Eye-hole; hold the convex Glass as steady as you can in one Hand, and move your Eye upwards or downwards, towards the Right Hand or towards the Left; then if the Picture of the
the

the large Metal in the Eye-hole has a Motion in the *same Direction* with the Eye, the Focus of the Eye-glass, whether single or compound, is between the Eye-hole and the Eye-glass; but if the Picture of the great Speculum in the Eye-hole appears to move *contrary* to the Motion of the Eye; then the true Focus is between the Eye and the Eye-hole. In the former Case the Eye-hole must be brought *nearer* to the Eye-glass, in the latter Case it must be removed *farther* from it, till you perceive the Picture of the great Mirror become Stationary, or without any Motion, in whatever Direction the Eye is moved; for then and then only the Eye-hole is *most accurately* in the Focus of the single or compound Eye-glass.

The Diameter of the Eye-hole may also be determined exactly by viewing, with the small convex Glass held in the Hand, as in the preceding Operation, the exact Size of the Picture of the great Metal in the Place of the Eye-hole, determined accurately by the foregoing Direction. If the Area of the Eye-hole appears a small Degree larger than the Area of the emergent Pencil of Rays, or the Picture of the great Speculum, then it is sufficiently large to transmit all the Rays of Light which come from the great Metal. But if the Area of the Eye-hole is found to be less than the Area of the Picture of the great Speculum, the Eye-hole must be enlarged till its Diameter shall be found equal to, or rather a little larger than the Diameter of the emergent Pencil of Rays.

T H E E N D.

AN
A C C O U N T
OF THE
CAUSE AND CURE
OF THE
T R E M O R S
PARTICULARLY AFFECTING
REFLECTING TELESCOPES
MORE THAN
REFRACTING ONES.

BY
THE REV'D JOHN EDWARDS, B.A.
Contained in the EXTRACTS of Two Letters
FROM HIM TO
NEVIL MASKELYNE, D.D. and Astronomer Royal.

WITH REMARKS ON THE SAME SUBJECT
BY THE
ASTRONOMER ROYAL.

ASTONOMER ROYAL

*An ACCOUNT of the Cause and Cure of
the Tremors peculiarly affecting Reflecting
Telescopes more than Refracting ones. By the
Rev'd JOHN EDWARDS; contained in the
Extracts of Two Letters from him to NEVIL
MASKELYNE, D.D. and Astronomer Royal.*

EXTRACT I.

Ludlow, Feb. 26th, 1782.

I HAVE the Pleasure to inform you, that I have made One Discovery of no small Moment to Reflecting Telescopes, and which cannot fail of bringing them again into your good Opinion, and of restoring them again as preferable to Achromatics for astronomical Purposes. I am sure whatever Discoveries are to be made in the Heavens we must be obliged to Reflectors for them, as we can give them what Aperture we please. In short, Sir, I have discovered the true Cause of the Tremors in Reflectors, and can and have cured them in my own Telescope. This is not imaginary. I do not deceive myself, as I have already shewn the Difference to a Gentleman of this Place. I can make them shew Objects to tremble or remain steady, as I please. I now see the great Difference, and the Advantage of curing these Tremors.

EXTRACT II.

Ludlow, Nov. 16th, 1782.

IN regard to the Cause of Tremors in Reflecting Telescopes, I have not made a great many Experiments upon them; though what I have made seem to shew me the true Cause of them; viz. 1st, to the Springs at the Back of the great Speculum, which are every Moment varying their Elasticity, and therefore do not press the Metal equally at all Parts of it; nor indeed does the Pressure continue the same at the same Place for a few Seconds. This is One Cause. 2dly, Another Cause, I think, is the Eye-hole of Reflecting Telescopes; since, as the emergent Pencil of Rays comes through so small a Hole, the least Motion of the Eye side-ways, or upwards, or downwards, will cause the Objects to dance or tremble*. This latter Part of the Error may be easily cured in a *Newtonian* Reflector by taking away the small Eye-hole intirely, which will be no Detriment in the Night-time, as no Light from the Sky can fall immediately on the Eye-glass. In the

* In a subsequent Letter Mr. *Edwards*, very properly, attributes the Detriment arising from the Eye-hole to the Inflection of Light; the Effects of which seem to have been first observed by *Grimaldo*, but which were afterwards examined farther by very nice Experiments by Sir *Isaac Newton*, and shewn by him to arise, not from the ordinary Refraction of the Air (as had been supposed by some) but rather (as attributed in his *Queries*) to a real Repulsion subsisting between the Rays of Light and Bodies which they approach near to. In Fact the bad Effect of the Eye-hole in producing Indistinctness at least, if not Tremors, is very sensible, although the Eye be kept as steady and free from any transverse Motion as possible. N. M.

Gregorian

Gregorian Construction the Eye-hole cannot be so easily removed, even in the Night, except it is very dark, as the circumambient Sky-light will fall immediately on the Eye-glasses. If you will take away the Springs at the Back of the Metal, and put the Metal to stand (for a Trial only) on Two small Bits of Card placed in this Position, where *a* is the Top of the Metal, *b* the Bottom, *c* and *d*, the Two Pieces of Card; if you take Care to wedge it in its Cell just so tight with the Bits of Card



as to prevent the Metal from falling down or backwards, I think you will not find any Tremors then appear in the Telescope, if you will try it against an Achromatic at the same time. The above Method is only to shew that the Springs at the Back are the chief Cause of those Tremors; at least they have always appeared so to my Eyes. I remember once, when the Objects had great Tremors, I took off the Springs and fastened the Metal gently in with Two Bits of Card, and I could not then perceive the least Tremors. I replaced the Springs; the Tremors returned as bad as ever. I then took them away as before, and could see no Tremors. A Gentleman of *Ludlow* present with me saw the same, and declared that the Springs were the immediate Cause of the Tremors; though if the Eye was moved much at right Angles to the Axis of the Pencil of Rays, we could still perceive some Tremors owing to the Eye-hole. I much dislike the constant Practice of putting the Metals to bear their whole Weight on their lower Point as at *b*, as the Weight of the Metal resting on that Point bends the Metal in a small Degree, and hurts

hurts the Figure. This may appear strange; but indeed I can at any time totally spoil the Figure of a Metal by wedging it in only with the Thickness of a Bit of common Writing-paper. Dr. *Smyth* says One-thousandth of an Inch will spoil its Figure. I am sure also that that Quantity, if not less, will injure it. If the Metal was made to rest at Two Points, *viz.* *c, d*, each of which is 45° from *b*, and 90° from each other, I think the Figure would not be injured at all. I do not see that the Thickness of the Metal is of any Service to prevent this small Degree of Bending, for I never yet saw a large Metal whose Figure I could not spoil with an exceeding small Pressure at its Back. Nor do I approve of Three Screws at the Back to bear against the Metal, as I altered my own small Telescope to that Plan, and I never could make the Screws bear equally alike, but they would bear harder against one Place than another, and so spoil the Figure. I think they had best be fastened by Three small Screws passing through the Tube, perpendicular to the Axis, and of such a Thickness as for their Sides to touch the Back of the Mirror barely without any Shake. By removing the Brass back (*viz.* the Brass into which the Eye-piece is screwed) you may see the Screws bear side-ways against the Mirror in Three Places, and may file away the Sides of the Screws, so as to make them just touch the Mirror, but not much more.

Addition

*Addition to the Directions concerning the Composition of
the Metals of Reflecting Telescopes.*

IN making the Composition of the Metal it is better to proceed thus than according to the Method I have laid down in my Paper, as I have since experienced in some Metals I have made. Make the brilliant Composition first of Copper and Tin. Melt the proportional Quantity of Silver and Brass in a small Crucible by itself. When you put the brilliant Composition the Second time into the Crucible, add also the Lump of Brass and Silver melted together before in a separate Crucible; and when the whole is now fluid, add the proportional Quantity of Arsenic, and then pour it off into the Flasks, after the Scoria is taken off, and a little powdered Rosin is thrown into it. In other Words, it is better not to add the Brass to the melted Copper in the First Melting, as the Heat of the Copper calcines the *Lapis Calaminaris* in the Brass, which renders the Metal not so good as if the Brass and Silver were melted together (as Silver melts with a less Heat than Brass) and then added to the Metal in the Second Melting. As Copper requires a much greater Heat to melt it than Brass, it gives too great a Heat to the Brass when it is added to it, which by calcining the *Lapis Calaminaris* in the Brass will sometimes cause the Metal to be in a small Degree porous. By pursuing the above Method it will never be porous in the least Degree. We are not to imagine it porous because it breaks up with the Emery. It will always break up with the finest Emery; but these Break-ups are taken out by the Bed of Hones or Stones. If the common blue

Hones

Hones are used, but little Water must be used at a time, or they will never cut the Metal.

Of the Fuel used in casting the Metal.

I HAVE used all Kinds of Fuel in casting the Metal; viz. Coal-coak, and Wood-charcoal; but the best by far, and which I almost always used, is Coak. It is common Coal charred, and gives a fine and constant Heat; it is to be had at all Malsters, as they dry their Malt with it. This is the Material they always use to cast with at *Birmingham* and *Wolverhampton*. Common Coal smokes so much that you cannot see into the Crucible, and is a very nasty Material. The Coak casts no Smoke at all. I have sometimes, but very seldom, used Wood-charcoal; but it is very dear, besides it does not do near so well as the Coak, as the Draught of an Air-furnace is so great it burns it out immediately, so that you might almost as soon endeavour to melt the Metal with Paper thrown into the Furnace.

REMARKS

REMARKS on the Tremors peculiarly affecting Reflecting Telescopes more than Refracting ones. By NEVIL MASKELYNE, D. D. and Astronomer Royal.

IN the continual Course of my Observations at the Royal Observatory I have almost constantly found the Two Reflecting Telescopes, a *Gregorian* of Two Feet, and a *Newtonian* of Six Feet, both made by the late Mr. *Short*, to shew the celestial Objects indistinct and affected with Tremors, when at the same time the Forty-six Inch treble Object-glass Achromatic shewed them much freer or intirely free from them; and for the most Part more distinct and better than even the Six Feet Reflector did; tho' One should suppose the latter, from its Length and Aperture, ought to be a much more powerful Telescope than the former. The same Difference between the Effect of Reflectors and Refractors I found also in viewing Land-objects; having often seen them perfectly steady for Hours together thro' the Achromatic Telescope, and at the same time in continual Tremors thro' the Reflectors. Remarkable as this Difference is between the Effects of Reflecting and Refracting Telescopes, I do not know that it has been hitherto noticed by Astronomers; I was led to it from constantly comparing the Achromatic and one of the Reflectors together immediately after Observations of Jupiter's Satellites or Occultations of Stars by the Moon, or any other Observations had been made at the same time by myself with one of the Telescopes and by my Assistant with the other. But I found the Detriment which the Tremors produce in the Effect of Reflecting Telescopes to be so great, that, unless they could be removed, I had long considered Reflecting Telescopes

copes as Instruments that ought to be banished from astronomical Uses, as being much inferior in their Effects to Achromatic Telescopes of much smaller Apertures. I wished however that the Cause of this strange Phenomenon in Reflecting Telescopes might, if possible, be discovered, and thence a Means might be found of removing an Error so fatal to their Improvement, and consequently to that of Astronomy. Mr. *Edwards* having been long employed in the Improvement of Reflecting Telescopes, I some Years ago proposed to him this Subject of the Tremors of Reflecting Telescopes as a Problem for his Consideration, to try if he could resolve it; which he has at length happily done, to the great Improvement of Reflecting Telescopes, and Benefit of Astronomy; as is explained in the foregoing Account of it extracted from his Letters addressed to myself. I have only to add, that upon removing the Springs from the Back of the great Speculum of my Six Feet Reflector, and steadying the Metal by Screws instead, I found the Tremors of the Object immediately removed, and the Object to appear incomparably better than it did before. I also found that by removing the Eye-hole, which is not at all necessary either for celestial or terrestrial Objects in a *Newtonian* Reflector, that the Appearance of the Object was still very sensibly improved, tho' not near so much as it was before by taking away the Springs. In short, by these Two easy Alterations, the Six Feet Reflector was so much improved as to shew the Object (a printed Paper) sensibly better and more distinct than the Forty-six Inch Telescope, which before had greatly the Advantage of the Reflector.

Some

Some time previous to my trying the Advantage arising from removing the Springs, I had hit upon an extraordinary Experiment, which greatly improved the Performance of the Six Feet Reflector, even as much as the Removal of the Springs did afterwards. As a like Management may improve many other Telescopes, I shall here relate it. I removed the great Speculum from the Position it ought to hold perpendicular to the Axis of the Tube, when the Telescope is said to be rightly adjusted, to one a little inclined to the same; and found a certain Inclination, of about $2^{\circ}\frac{1}{2}$ (as I found by the Alteration of the Appearance of Objects in the Finder, one of *Dollond's* best Night-glasses with a Field of 6°) which caused the Telescope to shew the Object, a printed Paper, incomparably better than before; insomuch that I could read many of the Words, which before I could make nothing at all of. It is plain therefore that this Telescope shews best with a certain oblique Pencil of Rays. Probably it will be found that this Circumstance is by no means peculiar to this Telescope*.

Consulting N^o 376, in Vol. XXXII. of the Philosophical Transactions, I see that Mr. *Hadley*, to whom the World is so much indebted for executing both Sorts of Reflecting Telescopes, and introducing them into common Use, as well as for the Quadrant that goes by his Name, supported the

* When the great Speculum is thus inclined, the little Speculum must be placed out of the Center of the Tube towards one Side, in order to receive the Rays of the oblique Pencil which come down the Axis of the Tube; and then none of the Light will be stopped by the Sides of the Tube, nor more Light intercepted by the little Speculum than in the common Position of it.

great

great Speculum of his Telescope at the Back, not by Springs, but by Three Screws directly answering to Three Bearing on the Fore-part. Mr. *Hadley*, however, unfortunately directs the applying of a Plate, with a little Hole in the Middle before the Eye-glass towards the Eye, to let no Light pass to the Eye from the Inside of the Tube but what comes from the oval plane Speculum.

What a Pity it is that Mr. *Short*, an able Artift, who first found out the Means of enlarging the Apertures of these Instruments considerably, by giving his great Speculums a parabolic Figure, should, by an unfortunate Mistake of applying Springs to support his great Speculums, reduce the Excellence of his Telescopes to a Degree probably below that of Mr. *Hadley*'s, who brought these Telescopes into common Use in the Year 1723. I have but too much Reason to believe, that all Mr. *Short*'s Telescopes were constructed in this improper Manner. This may serve as a fresh Instance of the Soundness of the Royal Society's Motto, *Nullius in Verba*.

Mr. *Herschell*'s Telescopes, which shew very minute double Stars, that other Telescopes, hitherto reputed good ones, will not reach (of which I am myself a Witness) and are probably superior to any Telescopes made before, are unencumbered with Springs and small Eye-holes. He tells me that he found Springs could not be applied to great Speculums that were above Five Inches Diameter without great Inconvenience; because if they were not made very stiff they would yield to the Weight of the Speculum in high Altitudes, and so alter the Adjustment; and if they were made very stiff they spoilt the Figure of the Speculum.

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